

THE IRON AGE

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See page 52

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SEE 26
PAGE 26



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THE IRON AGE

New York, Thursday, October 15, 1908.

Historic Machinery.

BY W. J. BLACKMUR.

Machine tools turning out exact work have become so common that it surprises one to remember that only a century ago there were no screw lathes and planing machines. The few engineers in those days depended on the file and chisel, and most of the fitting was done, not within 1-1000 in., but within $\frac{1}{4}$ in. The lathe was for simple turning, and there were no screw cutting lathes to do accurate work. Having become accustomed to things as they now exist, it is almost impossible to understand some of the difficulties which the first engineers had to contend with. Indeed our modern work, done with such precision, makes the work of Watts,

glass case and carefully protected. This lathe is doubly interesting as Sir Joseph Whitworth operated this lathe for several years at the works of the inventor, Henry Maudslay, at Lambeth, England. The machine employs a lead screw and change wheels for producing screw threads. The bed consists of two triangular bars secured at a fixed distance and supported on feet by which it was secured to a bench. The height of the centers is $1\frac{1}{2}$ in. and the length of the bed about 3 ft. The headstock is fixed to the back bar only, but the carriage, which is of gun metal, slides on both bars and carries a tool holder, which can be moved to and from the work in V slides by a screw and handle. Between the two guides is a square thread lead screw 1 in. in diameter by $1\frac{1}{4}$ -in. pitch. This screw is geared to the lathe spindle by change wheels, while a split nut and a clamping device at the bottom of the carriage formed a connection

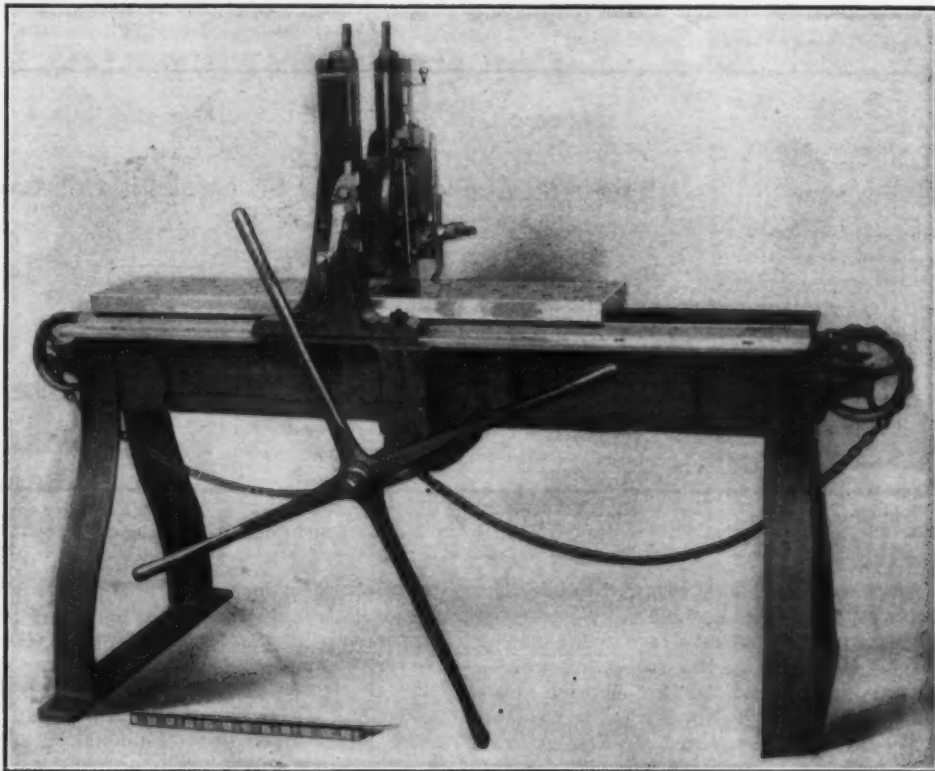


Fig. 1.—The Original Metal Planer, Now in the Patent Museum at South Kensington, England.

Trevithick and others appear exceedingly rough, until it is recalled that the planing machine and the screw lathe had not then made their appearance.

The Patent Museum at South Kensington, England, contains two machines which deserve recognition in mechanical history—the first machine ever used for planing iron and the first screw lathe for cutting threads and doing other work. The notice upon the planing machine, a view of which is reproduced in Fig. 1, is exceedingly short and states that it was made by Mr. Robert. From marks on the bed it is without doubt the first one made. The bed was moved backward and forward by hand through a windlass, the shaft of which carried a wooden drum underneath the bed of the machine. A chain fastened to each end of the bed, makes three turns around the wooden drum and goes over a wheel at the end of the frame. The headstock and tool holder are similar to modern planing machines and traversed across the work on a horizontal slide. The two upright screws on the headstock have separate motion.

Not far from the planing machine is the first screw lathe, which is shown in Fig. 2. The planer is exposed and can be closely inspected, but the lathe is within a

between it and the screw, which could be released when desired.

In another corner of the museum are the relics of Old Beelzebub, one of the ancestors of the steam engine. This engine had an ending which fitted its name, for it was destroyed by fire, but the steam piston and cylinder and much of the ironwork is left. The engine was constructed in 1769 at Kinnell, but was not a success owing to defective mechanical construction. Old Beelzebub was made to turn a water wheel, and when it was burnt down a new engine made by Watts and Boulton, called Old Bess, took its place. The piston of this engine is interesting, as it shows the crudity of mechanical work at that time. The top of the piston is removable in three sections to permit filling a circumferential recess in the piston with rope tallow and other materials to make a steam tight joint. The plates when replaced and bolted up forced the packing against the walls of the cylinder.

It seems exceedingly strange to build an engine to turn a water wheel, but these two engines were built for that purpose. Boulton was a large manufacturer of metal articles and had two water wheels to drive his

metal polishing machines. During dry weather the water would run low and from 1 to 10 horses were put to assist driving the factory. To displace these horses and to work the water wheels Old Beelzebub was constructed. It had an 18-in. cylinder, a 5-ft. stroke and worked an 18½-in. pump, pumping the water from the tail race back again to the head race, and so keeping a breast wheel 24 ft. in diameter by 6 ft. wide going when water was scarce. For a long time after this it was the practice to use engines for pumping water to drive water wheels because the motion of a water wheel was much more regular than that of the early steam engines. It was found when Old Bess was dismantled that an old furnace was under the cylinder, so even in those days some crude attempts were made at superheated steam.

Near the old engines in the museum is the Puffing Billy, and close to this is the model by which William Hedley solved the problem of locomotion. It was generally considered 100 years ago that a smooth wheel upon a smooth rail would not get enough grip to haul cars. In 1812 the cost of hay for horses and materials necessary to carry on a colliery having a long haulage was so high that unless something could be invented to supersede horses Hedley saw nothing before him and his family but ruin. It was one night after retiring, almost despondent

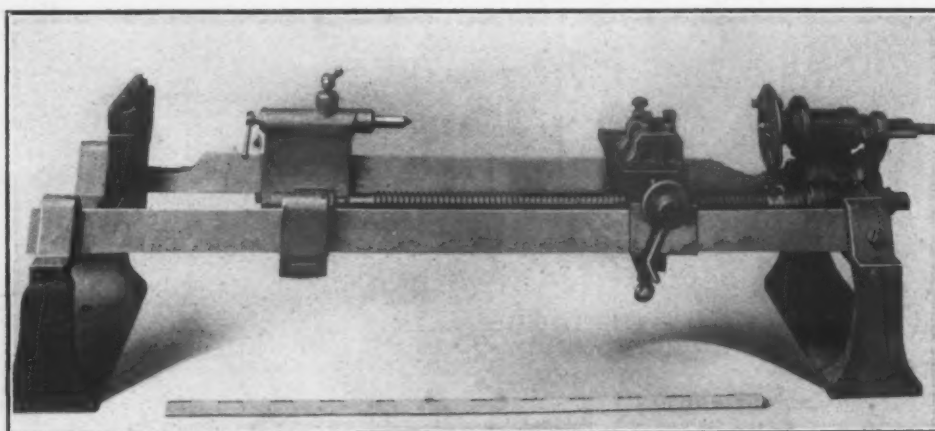


Fig. 2.—The First Screw-Cutting Lathe.—Invented by Henry Maudslay and Once Operated by Sir Joseph Whitworth.

and unable to sleep, that it suddenly occurred to him that if all the wheels of a moving machine were connected together any tendency of one to revolve without moving forward might be overcome by the remaining wheels. He resolved to test the idea and the next morning had a model made by a clock maker in Newcastle. It was successful and in 24 hr. he had invented the first railroad locomotive. The model is in a case in the museum and has gearing in the center connecting the wheels together like the works of a clock. Hedley had a full sized underframe constructed with gear connected wheels, these being turned by men upon the frame, so that the adhesion of all the coupled wheels was available for tractive effort. The frame was afterward fitted with a cast iron boiler and a single cylinder of 6-in. diameter to drive the road wheels through intermediate gearing. After repeated trials with different engines a new one was made, which was called the Puffing Billy. It ran from 1813 to June 6, 1862, when it was removed to the museum. That was the first of locomotion by steam upon smooth rails.

A cylinder of a 10-hp. engine also in the museum is worth attention, because of the method Watts employed to fasten the cylinder. It had a 48-in. stroke and was 17 in. in diameter. The steam was conducted to the ports by a pipe connecting the two and having taps which were opened and shut as required. This engine stands on 10 x 24 ft. of ground and has a sun and planet motion. As its maximum power was 13 hp., it gives some idea of the advance that has been made in the concentration of power in steam engines. Genius reveals itself in industrial inventions, and to the thoughtful there is much of interest in knowing how the appliances of today sprang from a few crude appliances.

Grades of Lake Copper.

In his decision in the case of the Calumet & Hecla Mining Company against the Osceola Copper Mining Company, Judge Knappen, of the United States Circuit Court, at Grand Rapids, Mich., summarizes as follows the facts developed in the testimony in regard to the different grades of lake copper:

"Lake copper differs from most other copper in that it is 'native' or usually 'free' and substantially pure, arsenic and other impurities being united with the rock, where elsewhere united with the metal. Till recently practically all copper was furnace refined, and impurities were more readily removed from lake copper and a better product was obtained. But by electrolysis practically absolute purity is now obtainable, and as a result much lake copper is now refined electrolytically. Calumet refines its highest grade mineral by furnace; other grades by treating a lower grade electrolytically and mixing it with another grade not electrolytically treated, thus diluting the percentage of impurities. Its copper, however treated, is entirely lake copper and sold as 'best lake' copper (not electrolytic) and at one price. Osceola, Tamarack and Ahmeek mix their minerals with cathodes of Western copper produced by Boston & Montana, usually

in equal proportions. The product is sold as 'best lake,' not as electrolytic, though but half lake. Some other lake coppers are likewise treated. Of 224,000,000 lb. of lake copper, Calumet's 95,000,000, Quincy's 16,000,000, Osceola's 18,500,000, Tamarack's 10,000,000, and Ahmeek's 3,500,000 are conceded best lake; 24,000,000 lb. of seven other mines (including Centennial's 2,250,000 and Wolverine's 10,000,000) are capable of use for all purposes as lake copper; and no reason appears why most of the remaining lake products too arsenical for high furnace refinement cannot be electrolytically refined.

"There is no inherent chemical or physical difference between equally pure furnace refined and electrolytically refined copper, if the latter is subjected to the same final furnace process, as it usually is. Electrolytic is capable of use for any purpose for which best lake is used. The ¼ cent premium of the latter is probably due to the long existing good reputation of lake. With electrolytic improvement, this preference is diminishing. The government originally specified Calumet alone for cartridges, but now indicates a willingness to take the best electrolytic. In the last five years Calumet has sold the government only 1,000,000 lb. Attempt to raise the price of lake as against electrolytic would be offset by larger use of electrolytic.

"If the distinction between lake and electrolytic is as sharply identified as complainant claims, his marketing yearly 60,000,000 lb. as lake which is but half lake raises the question as to his right to relief against monopoly in lake. But neither lake nor 'best lake' is so far a distinct commodity as to make Calumet control of Osceola, Allouez and Centennial necessarily tend to restraint of trade or monopoly in lake or best lake; hence no violation of federal laws."

A Water Cooled Port for Open Hearth Furnaces.

At the Minnequa Works of the Colorado Fuel & Iron Company, Pueblo, Colo., Frank E. Parks and Harry A. Deuel have installed a water cooled port on the company's open hearth furnaces and have recently been granted a patent on the device, which has been giving good service. On all producer gas regenerative furnaces the greatest troubles are with the valves and port arches. In handling the latter class at the Minnequa Works four points were in view: 1. Cost of installation. 2. Cooling the arch between gas and air its entire length. 3. Placing the cooling device where the temperature of the incoming and outgoing gases would be affected as little as possible. 4. A water cooled port that would be easily applied to any design of furnace.

Fig. 1 shows a sectional view of an open hearth furnace with the cooled port applied, and Fig. 2 presents a section at right angles to that in Fig. 1. In brief, the cooling construction is as follows: A series of 2½-in. pipe is brought in over the bottom arch of the gas port. These pipe end in a bronze block so shaped that they form a solid arch at the inside of the port. At each side is a skewback bronze casting which supports this arch should the brick arches burn out or fall, and prevents the port

the gas arch. The annoyance of a leak through the arch is done away with, and the producer gas introduced at a constant point, which is essential for regular, continuous working. The cooling is performed with the least possible absorption of heat from the furnace. The brick above and below are cool enough not to run but not enough to affect the incoming or outgoing gases. This has an essential bearing on the coal consumption per ton of ingots produced. The application of the port is flexible enough to meet any design of furnace without first making extensive alterations.

The first furnace on which the Parks port was installed cast its first heat April 25, 1908, and was thrown off September 16, 1908, with 315 heats cast, or an average for the run of 2.64 heats per day operating. This includes all delays incidental to furnace operation, such as bad bottoms, &c. The furnace had a handicap in the fact that it started its run with a set of checkers from which 234 heats had been made. Another furnace having this port cast its first heat June 27, and up to September 17 had cast 204 heats, or an average of 2.91 heats per day operating. This furnace in August made 80 heats, with no extra time worked; that is, it shut down on Saturday and started to charge Sunday morning.

The National Steel Sheet Company.—Through the efforts of the Mansfield Chamber of Commerce, Mansfield,

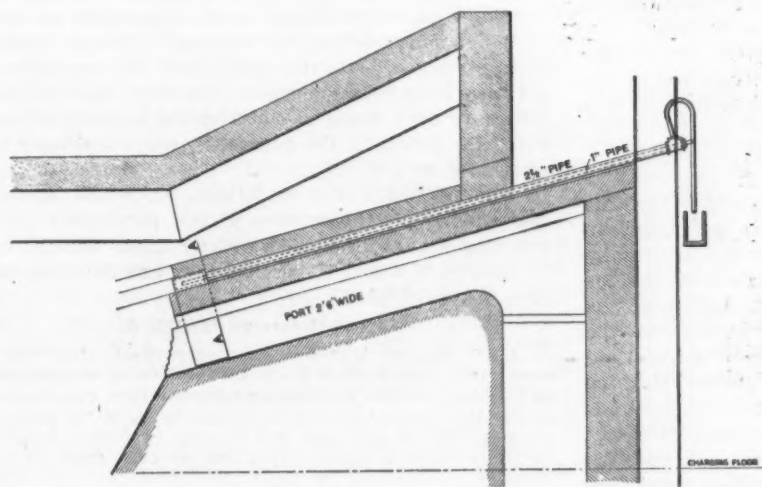


Fig. 1.—Section of Open Hearth Furnace, Showing Arrangement of Port Cooling Pipes and Bronze Box on End.

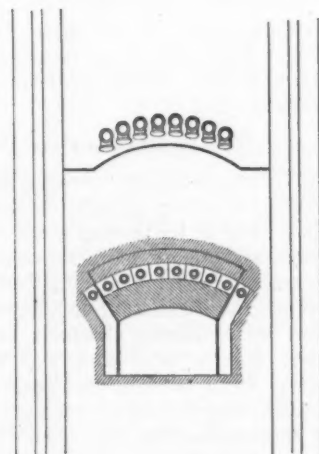


Fig. 2.—Section at A-A in Fig. 1.

from burning out on the sides. These bronze blocks are from 12 to 24 in. long. Good results have been secured by the use of 12-in. blocks. The supply water is brought in a 1-in. pipe which runs within a few inches of the end of the bronze block. This introduces the coldest water at the hottest point and also renders the flushing of the pipe much easier. For the Colorado works the supply water is brought some distance in ditches and generally carries considerable sediment and mud, which must not be allowed to collect or the pipes will soon burn off. To prevent this collection a high pressure line is connected with the low pressure system and by closing a valve high pressure can be turned in and the whole system flushed. The cold water being introduced at the hottest point overflows back and is taken out at the end of the furnace as indicated in Fig. 1. Over the water pipe a little silica sand is tamped and then an arch of brick is thrown over. The overflow is run into a cast iron trough and each outlet is plainly visible. The water is either taken over the McKennan valves or to the sewers.

Concerning the cost of installation, it is stated that several furnaces have been equipped at an average cost of less than \$500. This includes all material and labor. The second installation would be less, as many fittings can be used continuously. The greatest renewal is in the 2½-in. line, as after being in the arch for a run of the furnace it is somewhat worn and the cost of replacement is so small that it is not advisable to take any chances of a pipe bursting.

This construction cools and maintains the length of

Ohio, the National Steel Sheet Company has decided to locate in that city. The company proposes to erect a five-mill plant, both hot and cold rolls. There will be two departments at the start, a galvanized plate or sheet department and a sheet metal department for the manufacture of blue and black sheets. A suitable site has been secured adjoining the Pennsylvania and the Baltimore & Ohio railroad tracks. Work on the plant will be started at once, and it is expected that it will be ready for operation by February 1. The National Sheet Steel Company has a capitalization of \$100,000, the principal stockholders being Canton, Ohio, and Pittsburgh capitalists. William M. Blecker is its president.

The William B. Pollock Company, Youngstown, Ohio, has received an order from the Electric Operating Construction Company, 49 Wall street, New York, for about 7500 ft. of 42, 45 and 48 in. steel riveted pipe, to be used for carrying water in the southern part of Arizona. The pipe will be laid 18 in. below the surface of the ground. The company has about completed shipment of a mile of 42 to 48 in. riveted steel pipe for a water line for the Arizona Power Company, Prescott, Ariz.

The Vilter Mfg. Company, Milwaukee, Wis., is building two refrigerating machines for the Northwestern Iron Company to be installed in its dry blast plant at Mayville, Wis. These machines are similar to those the company installed in the Gayley dry blast plant at the South Chicago Works of the Illinois Steel Company, which was illustrated and described in *The Iron Age* of October 8.

Shop Suggestions from Employees.

At the last convention of the British Foundrymen's Association held in August at Newcastle-on-Tyne, England, a paper was read by R. W. Kenyon of the Ewbank Works, Accrington, on "How to Secure the Co-operation of the Workman in the Improvement of Shop Methods." The writer gave an account of the methods adopted at the Ewbank Works to promote good feeling, citing, as an evidence of some success in the effort, the fact that in this comparatively small plant, out of 180 workmen, clerks and travelers, there are 59 men, or one third, whose years of service with the company average 21. The first attempt to secure co-operation was made 30 years ago, when each foreman was given a monthly bonus on the saving in his department. In 1889 a bonus system for the men was started, this, in the judgment of the writer of the paper, being identical with the "premium system" in the United States, though he had never heard of such a plan when he suggested it to his firm. A price was fixed for which an article should be produced and one half of any reduction in that piece price by increasing output was paid the workman. A later move of the company was devoting its "fine fund"—the small fines imposed on employees for violations of rules—to the relief of employees in cases of accident and sickness, after the passage of the Workmen's Compensation Act giving the entire amount to cases of sickness.

A large part of the paper was given up to the "awards for suggestions" scheme as carried out at the Ewbank Works. From the author's interesting account we take the following:

The Dayton Plan the Basis.

At its inception our "awards for suggestions" scheme was not original; it was based upon an American scheme. But in its present shape I think it is essentially original, and also a more reasonable plan than the one from which it originated. In 1903, C. B. Auel, who was for some years assistant to the general manager of the British Westinghouse Company at Trafford Park, Manchester, and is now with the Westinghouse Machine Company in Pittsburgh, Pa., suggested that our business was essentially one in which we ought to be able to get good suggestions from the men. He mentioned that the National Cash Register Company of Dayton, Ohio, had a system in operation for remunerating the men for suggestions, and advised me to get into correspondence with the company. I did so, and became an enthusiastic admirer of the company's principle of giving rewards to the men for suggestions for improvements. I found that the acceptance or rejection of the suggestions and the amount of the award were decided upon by a committee, and that a sum of about \$1500 was available annually for prizes, the amount of the award being limited as far as I could gather to \$50 in any single case. We followed the Dayton company's method very closely in our original plan, but knowing the skepticism of the British workman when the employer offers him a gift, we thought that it would be advisable, in order to secure his sympathetic co-operation, to have a committee on which there should be representatives of the workmen equal in number to the representatives of the employers.

Our original method was that we would have a half-yearly competition, and we arranged that all suggestions sent in should be dealt with by the committee referred to. This committee was composed of seven representing the employers and seven representing the men; the seven for the employers being three directors, the secretary and three foremen, and the seven representing the men being one man selected by the men from each of seven departments. This system was found at the outset to work satisfactorily. The voting as to the amount of the award was by ballot, and it is a singular fact that in all cases when the amounts suggested for the successful competitors were examined, the amounts suggested by the directors were always in excess of those suggested by the foremen and the men. Naturally there were some suggestions which were not considered of sufficient merit to be adopted, but on the whole the effort was fairly success-

ful. The committee meetings were always held in the evening, and in order that the men on the committee might not feel that their time was being wasted, the directors arranged that they should be paid at their usual rate of wages for all time spent at the committee meetings.

Objection to Employees' Committee.

A little over two years ago an incident occurred which showed that however good it was in theory to have the workmen themselves sitting on the adjudicating committee, there were objections to it in practice. One of the men told a director that he had a suggestion to make with regard to his own work, by which he could do at least 50 per cent. more work if certain alterations were made in the arrangement of certain machine tools. He was told to send in his suggestion to the committee, but this he refused to do. He said that men who had made suggestions had suffered so much from the chaff and humbug of some of the men who either had not the brains to send in suggestions or were too indifferent to do so, that if he might not make the suggestion in confidence to the directors he would drop the thing altogether. The matter was considered by the directors, and it was then decided that in future, instead of a half-yearly competition, the scheme should be made continuous, that suggestions should be sent in at any time, and that the competitor should himself decide whether the suggestion should be adjudicated upon by the committee, who would be called together for the purpose, or by the directors. It is worthy of note that since then the committee has not once been called together. In every case the directors have been asked to consider the suggestion, and to make the award if the suggestion was considered to be worthy of one.

Posters, which read as follows, are exhibited now in every part of the works, giving particulars of the amended scheme, I would specially draw your attention to Clauses 3, 4 and 5, because they are the enunciation of a new principle:

The Scheme as Modified.

1. We propose in future that suggestions, either for improvements in methods or systems of production or manufacture, or for improvements in articles we manufacture, may be sent in at any time, instead of once in six months, as in the past. The secretary will, at any time, and in strict confidence, supply the necessary forms on which suggestions are to be made, as in the past.

2. Suggestions may be adjudicated upon in one or two ways, at the option of the person sending in the suggestion—viz.:

(a) It may be sent in as before to the Suggestion Committee, who will decide what award, if any, has to be made. The sealed envelope containing the suggestion may either be left with the secretary at the office, or sent to him by post. A meeting of the committee will then be convened, and the amount of the award will be settled by the committee as in the past; or,

(b) Where publicity is not desired, it may be addressed to the directors, who will treat it as a confidential communication, and will not divulge the name of the person making the suggestion except with his consent or by his desire.

3. Where the scheme is submitted to the directors under paragraph (b), and is one for an improvement in methods or system of working or production, the directors will decide upon the merit of the suggestion and what award, if any, shall be made, and they undertake that any sum they award shall be given privately, and no mention made of it in any way except where otherwise desired.

Where no outlay in new machinery, &c., is entailed, and where the cost of altering existing machinery, tools, &c., is not of any moment, the general basis on which the award will be made (should the suggestion be adopted in its entirety by the directors) will be one-half the amount of the total saving effected during a period of two years from the day when the suggestion is put into operation. This amount will be paid quarterly so long as the man who makes the suggestion remains in our employ, but payment will cease if he leaves our employ.

Where considerable modification of the suggestion is necessary to make it practicable, or where special outlay in plant or appliances is required, then a special arrangement will need to be made between the directors and the person making the suggestion.

4. When the suggestion is submitted to the directors under paragraph (b), and relates to improvements in the articles already being manufactured by the firm, a special arrangement will need to be entered into in every case between the directors and the person making the suggestion.

5. In any and every case the directors undertake not to make use of any suggestion without first having come to a mutually satisfactory arrangement with the person making such suggestion, except the suggestion is a matter of public knowledge, or the company has already experimented with, or has put

into practice a similar idea, or already has the idea on its own list of improvements to be worked out.

The Award Fund Not Limited.

I would again direct your special attention to what I consider is the keynote of our later scheme, and the point where we now differ so materially from the scheme of the National Cash Register Company. In their scheme the amount at disposal for the awards was limited to a certain sum per annum. In our case it is absolutely unlimited, which from the workman's point of view must be a preferable arrangement. The broad principle of our scheme is that the workman shall be entitled to half the savings of the first two years after the scheme has been put into operation; that is, when the suggestion relates to a process of manufacture. Where the improvement is in any of the articles we manufacture, and it is considered to be patentable, a patent will be—and, in fact, has been—taken out at the expense of the company in the joint names of the company and the workman, and a royalty paid on each article made. I call this a really businesslike principle. The award is not a matter of charity, neither does it leave room for any dissatisfaction with the award. We give half the savings for two years, and so whether the award is £1 or £1000 depends entirely on the suggestion itself, and thus the man fixes the amount of his award.

While we have not been flooded with suggestions, I think we have no reason to be dissatisfied with the results up to now. The drawback under clause (b) of section 2, by which suggestions are made to the directors in confidence, is that the workmen generally are in ignorance of what is being done, and so that stimulus is lacking which was provided by the old scheme, when the suggestions were sent to the committee and the awards publicly made. I have asked my co-directors to alter this arrangement, and they are willing that in future a half yearly announcement shall be made which, while concealing identities, shall give the men a general idea as to the suggestions received, the departments from which they come, and the value of the award. I am inclined to think that at some later day, when ignorant jealousy has died down and the thinking men in our works have experienced the monetary advantages of our scheme, it would be a good plan to adopt another point of the American scheme, and to issue a handsome diploma to all successful competitors to serve as a memento of their achievement.

Fuel Purchases Under Inspection and Analysis.

At the meeting of the Philadelphia Foundrymen's Association, October 7, William S. Gould, president of the Fuel Engineering Company, 59 Pearl street, New York, read a paper on "Systematic Inspection and Analysis of Fuels." We present a synopsis of the paper below:

The haphazard policy of many manufacturers in the purchase of fuel does not comport with the care exercised in other details of their business. The custom of trying out samples of fuels and when a certain coal or coke is found that performs well to contract for that fuel ignores the question whether the same fuel whatever its economic value is delivered throughout the term of the contract. The exact commercial value of coal or coke may be quite different from the value shown by tests of mine samples. The latter are generally selected and may represent a level of heat value which cannot be maintained. It is wiser for the consumer to test his fuel and actually know what heating power it is developing. In a case which came under the writer's notice a certain coal which had always shown wonderful heating value and freedom from sulphur was bought on strict specification. Almost immediately trouble developed, and analysis of the coal on the dump revealed so high a sulphur content that another coal had to be substituted. On investigation it was found that the mining operations had run into a vein with excessive sulphur.

It is often said of anthracite coal that it runs very uniform in quality; but the buckwheat size, for instance, has been found to range from 10 per cent. to over 40 per cent. in ash. The question of moisture is also important.

Water at \$2.25 to \$2.60 a ton is expensive. Evaporation tests are not accurate, however carefully they may be run because it is impossible to burn the fuel at all times at the same rate and under the same conditions even in the same plant. Scientific tests of heat value made with the calorimeter check within 1 per cent., while evaporation tests will vary 10 per cent. or more. Moreover, observations of ash content are not always reliable. Of two coals with different ash content the sample with the lower ash will sometimes show also lower heat units, due to the difference in admixture of volatile constituents. Sometimes a considerable part of the ash may be dissipated by strong draft, and again the coal may not have been properly consumed, and the so-called ash would contain a large percentage of unburned carbon.

Experience with Fuel Analysis.

The purchase of fuels on the British thermal unit basis is no experiment. The United States Government, which is a buyer of over \$6,000,000 worth of coal a year, has found by the establishment of testing laboratories and by purchase under specifications, that some of the coal offered is expensive at any price. Mines producing a high grade product cannot lose anything by selling on specification, and mines producing lower grades ought not to be willing to put themselves in the position of selling their product under a misrepresentation.

Not long ago a cargo of a high grade coal was sold on its reputation. Before accepting it the buyer required a sample to be taken and analyzed. The test showed the coal to be a very different coal in every respect. Investigation showed that, although it was a shipment from the same mining company, it came from a different vein, and that an error had been made in billing it.

When a consumer has regular analyses of his fuel, experience has shown that if the quality of his fuel is good its quality will be maintained; if poor, the quality will improve. Within three months after securing a regular service of this character, a certain plant reduced the ash content of its coal from 25.83 to 12.93 per cent., and increased the heat efficiency from about 11,000 to 12,633 B.t.u. Another plant reduced the ash content of its coal from about 28 per cent. to about 15 per cent.; another plant, from 40 to 13 per cent.; another, from 35 to 16 per cent. If a coal is being used at the rate of 6000 tons a year that contains, for instance, 10 per cent. more ash than some other coal, the cost of removing the excess ash alone would pay for regular analyses. But if such analyses reduced the ash content of the fuel to its proper percentage, and saved the cost of removing the excess 10 per cent. of ash, a much higher heating efficiency would be secured with all its consequent economies.

A Comparison of Semi-Bituminous Coal and Anthracite.

The question often comes up whether semibituminous coals, apparently high priced are as cheap as anthracite. Many conditions must be considered, but take the basis of heating value alone. The average of several hundred samples of anthracite buckwheat showed an ash content of 19.42 per cent.; moisture, 4.65 per cent., and British thermal units as received 11,324. If you are paying \$2.25 per gross ton at tidewater, you would be able to buy 108,073 B.t.u. for 1 cent. In comparison, take the average of a large number of samples of semibituminous coals (which average is considerably below the average of the best grades), including a wide range of such coals from various districts, which showed: Ash, 6.28 per cent.; moisture, 1.93 per cent., and British thermal units as received, 14,118. At \$2.60 per ton, you would be able to buy 120,181 B.t.u. for 1 cent. Comparing the net values of these average samples, the average buckwheat sample is worth 89.9 per cent. of the average semibituminous sample.

The founder is particularly interested in coke analysis. High sulphur, for instance, may be present in any grade of coke, and that coke from the same mine and made in the same ovens will vary greatly in its sulphur content. A chemist for a large mining company has stated that he has known coal to vary from 1 to 3 per cent. in sulphur within 50 ft. Ash and moisture are also factors whose variations are important. Ash varies from 6 to 16 per cent.

The Panther.

A Floating Foundry and Machine Shop.

An important member of the Pacific fleet now nearing Japan is the repair ship Panther, the most completely equipped vessel of its kind ever fitted out by any navy. Days were when each vessel carried its own pro-

It will be remembered that during the Spanish-American War the United States Navy fitted out a vessel called the Vulcan as a repair ship to attend the fighting fleet. This forerunner of the Panther carried a number of machine tools with a small foundry equipment, but it was by no means as complete as this later repair ship. At that time the Panther was used as a cruiser having been converted to that service. Originally it was the Venezuela of the Red D Line. The



Fig. 1.—A Part of the Machine Shop on Board the Panther.



Fig. 2.—A View Toward the Structural Shop.

visions for making repairs which would suffice at least until it could make a port where permanent repairs could be made. Even now all warships have mechanics and tools for temporarily making the most usual repairs, but it is no longer possible for each ship to be sufficient unto itself. In the Panther the Pacific fleet has a complete iron and brass foundry, pattern, carpenter, forge and machine shops, as well as stores of repair parts and stock for making all kinds of repairs.

vessel is 312 ft. long and 42 ft. 8 in. wide. The main draft is 15 ft. 9 in. and the speed 13 knots per hour. It has a coal capacity of 675 tons and a total displacement of 3380 tons. In addition to the crew, the Panther carries about 50 mechanics.

The Carpenter and Pattern Shop.

Practically all of the machine equipment is forward of the engines and boilers and is located on the first deck below the main deck, which is known as the machinery

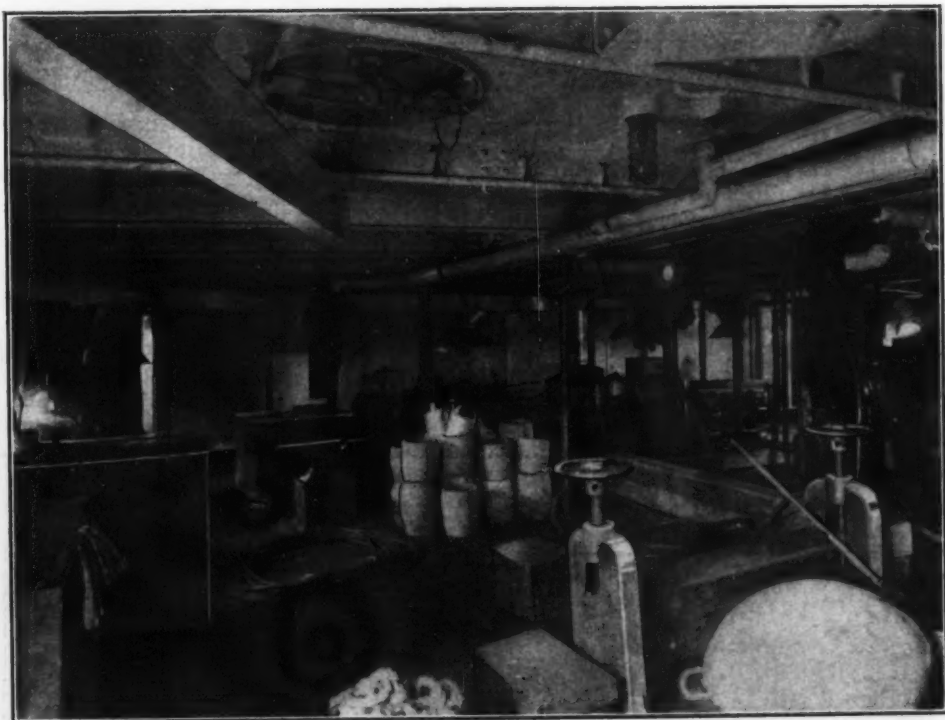


Fig. 3.—A View Toward the Forge Shop.

deck and corresponds to the gun deck in an ordinary war vessel. In the woodworking department there is a Fay & Scott woodworking lathe, a wood planer, buzz saw, band saw and benches. Not a very extensive equipment it might seem for a pattern shop, but when it is considered that no where is space a more valuable item than on shipboard, the Panther is after all rather completely equipped even in this department. Closely adjoining is the general

Machine Department,

a section of which may be seen in Fig. 1. Here are found a larger number of tools, since it is natural to expect that there will be more operations on metal than on wood in such repairs as would occur to present day war vessels. The machinery includes two 12-in. Le Blond engine lathes, two Bradford lathes, a Bickford radial drill, the arm of which is pivoted to a bracket bolted directly to the side of the vessel; a dry and a wet grinder, a Becker-Brainard milling machine with a special self-contained countershaft with individual motor

drive, a drill press, a Jarecki pipe cutting and threading machine, a Detrick & Harvey open side planer, 36 x 36 in. by 8 ft. in size; a Jones & Lamson flat turret lathe, a Putnam slide bed gap lathe, taking 16 ft. between centers normally and over 20 ft. when fully extended; a dry and a wet grinder, a Potter & Johnston and a Springfield shaper, a Bury air compressor and two square iron portable benches with vises. The five lathes are all driven from a line shaft which is connected with a motor. This is the only group drive on the vessel, all of the other machine tools being individually motor driven. An interesting drive is that of the buzz saw and wood planer in the pattern department; the motor is located between them and the belt may be placed over the driving pulley of either machine. In this way the floor space and weight of an extra motor is saved, and although only one machine can be run at a time, this is rarely, if ever, a serious disadvantage.

For work on structural materials and plates there is a department, seen in the background of Fig. 2, contain-

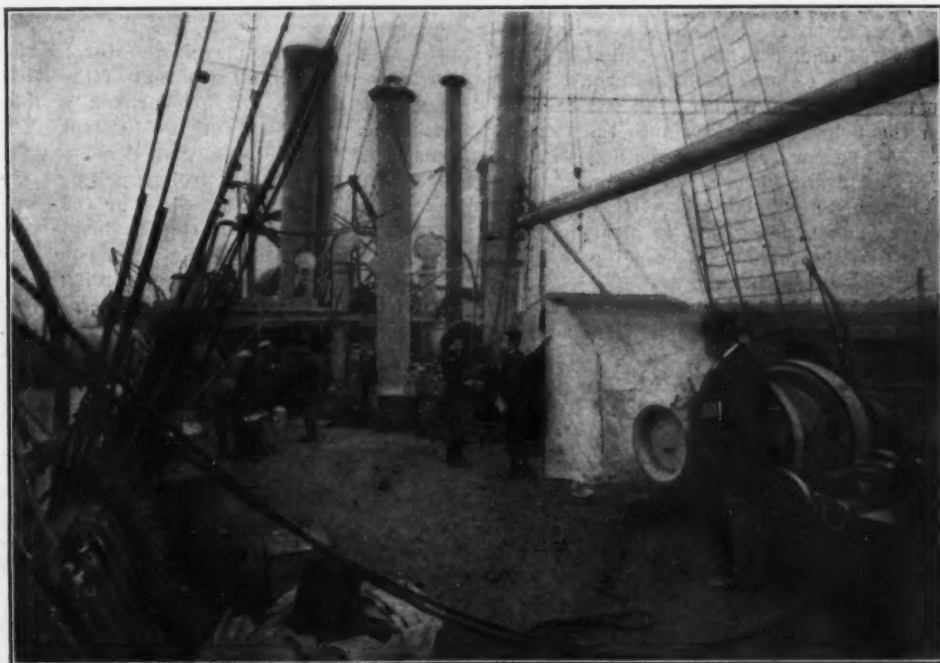


Fig. 4.—The Rear Main Deck, Showing the Cupola and Brass Furnace Stacks.

ing a combination punch and shear, plate bending rolls, a Watson-Stillman hydraulic bending press, &c. Still further toward the stern of the vessel is the blacksmith department, shown in Fig. 3. Here are located a steam hammer, one portable and five stationary forges, three anvils secured to cast iron blocks and a motor driven No. 6 Sturtevant forge blower. In the center of the picture may be seen a number of crucibles and sprinkling cans which are on their way to the foundry. The latter is further aft and on the deck below.

The Foundry.

In many respects the most interesting department in this floating shop is the foundry. The stacks of the cupola and the brass melting furnaces may be seen in the view on the deck given in Fig. 4. The furnaces are located far down in the hold and may be seen in Fig. 5. The charging floor of the cupola is on the machinery deck and all of the charging must, of course, be done by hand, since on shipboard saving of space is more to be considered than saving of manual labor. The equipment in

The Electric Show.

The New York Electrical Show, which closed in Madison Square Garden Wednesday, October 14, proved to be successful both in point of attendance and in the variety of exhibits. In addition to the companies mentioned in *The Iron Age* last week as showing apparatus of particular interest to manufacturers, a number of houses had exhibits on view which were not noted on the opening day. Among them was that of the Norton Company, Worcester, Mass., whose abrasive materials were exhibited in close proximity to a booth occupied by the Atchison Oildag Company, Niagara Falls, N. Y., which was demonstrating Oildag paste, a new lubricant. The Hoskins Company, 93 Erie street, Chicago, Ill., through Milton Cohen, Eastern sales manager for the company, showed the Hoskins electric furnaces, including a combustion tube furnace, muffle furnaces and an electric laboratory hot plate. The Bates Mfg. Company, 10 Fifth avenue, New York, demonstrated its hand number-



Fig. 5.—The Metal Melting Furnaces in the Hold.

the foundry melting department consists of a No. 1 Whiting cupola of 23 in. diameter inside the lining, a small Schwartz furnace and a Calorex melting furnace. The latter uses crucibles, which are also used for carrying the metal from the Schwartz furnace into the foundry molding room. In one corner of the melting room is located a No. 6 Sturtevant blower, driven by a steam engine of the same make, supplying blast to the cupola and the melting furnaces. Provision is also made for blowing fresh air into the foundry to keep the temperature down when the men are working.

The cupola base, as may be seen in Fig. 5, is surrounded by a low iron inclosure, to be filled with sand for catching the cupola drop. The molten iron or the molten metal from the other furnaces is carried to the foundry proper, which is a room of about 14 x 20 ft. For supporting the bull ladles or for handling copes or heavy castings, chain blocks and other lifting devices are provided which may be attached to the deck beams.

The foundry supplies, including molding sand, coke and iron for the cupola, ingot metal for the brass furnace, extra crucibles, ladle shanks, flasks, lifting and handling tackles, &c., are stored in the hold near the cupola. With the equipment provided it is possible to make a casting of any weight up to 2000 lb., and perhaps more. All of the furnaces and other equipment on board are anchored and braced so that they will not be displaced when the vessel rolls.

ing machines, and the Murphy Electrifier Company, Rochester, N. Y., displayed the Murphy electric rectifier. An interesting exhibit was that of the H. B. Camp Company, Pittsburgh, Pa., comprising a line of vitrified drain tile. The New York Pole Company, 277 Broadway, New York, made a special demonstration of a new system for reinforcing trolley poles at the base where they have become corroded. The company uses a steel cage reinforced cement column inside of the corroded pole, and sections of a reinforced pole were shown, and the method of applying the reinforcing was demonstrated by sectional drawings which were distributed. The Heany Company, 25 Broad street, New York, exhibited the Heany tungsten lamp and Heany wire, which is a fireproof magnet wire. The Gem automatic electric air pump, which, it is claimed, will fill an 18-gal. tank to a pressure of 25 lb. in 2½ min., was a feature of the exhibit of the Electric Light & Power Company of New York, and the General Electric Company, Schenectady, N. Y., showed a small Curtis turbine.

The Government estimates on crop conditions, published last week, indicate a corn crop of 2,515,000,000 bushels, or 51,000,000 bushels less than was indicated in September, and 77,000,000 bushels under the final returns for 1907. The final estimate for the bumper crop of 1906 was 412,000,000 bushels higher. The estimate for the wheat crop of 1908 is 659,030,000 bushels, while the

crop of 1907 was 634,087,000 bushels. The total of the estimates on corn, wheat, oats, rye and barley for 1908 is 4,161,354,000 bushels, while the total crops of these cereals in 1907 amounted to 4,165,413,000 bushels.

A New Steptoe Shaper Drive.

In another part of this issue is given a description of the foundry and machine shop equipment on the United States repair ship Panther, which mentions the necessity of economizing space in the installation of machinery on shipboard. In this connection the shaper herewith illustrated and built by the John Steptoe Shaper Company, Cincinnati, Ohio, is interesting, inasmuch as it was specially designed for one of the Government revenue cutters, where the particular requirement was a very compact machine with self-contained drive. For this reason the motor stand was placed on the base of the machine and against the column, where it does not project beyond the space which must be allowed for the return stroke of the ram.

Fig. 1 shows a general view of the machine as it ap-

pears with the gear above it. The upper gears are on the driving shaft proper. The larger one is 8 in. in diameter and has 78 teeth, and the smaller gear is 6 in. in diameter and has 58 teeth. The hand wheel at the bottom associated with the wide faced gear is used to turn the gears sufficiently to make the compound gear mesh with the gears on the driving shaft when the compound gear is shifted to change the speed.

A Montana Power Development.

Active work on hydro-electric installations at the Rainbow Falls and the Great Falls of the Missouri River has been begun by the Great Falls Waterpower & Townsite Company, Great Falls, Mont. The energy designed to be developed in these plants is in the neighborhood of 23,000 to 24,000 hp. each at the lowest stage of water. The Rainbow dam will consist of a timber crib, rock filled structure, about 26 ft. high and 1100 ft. long between gate masonry, and will have on the south side of the river five sluice gates for the control of the river

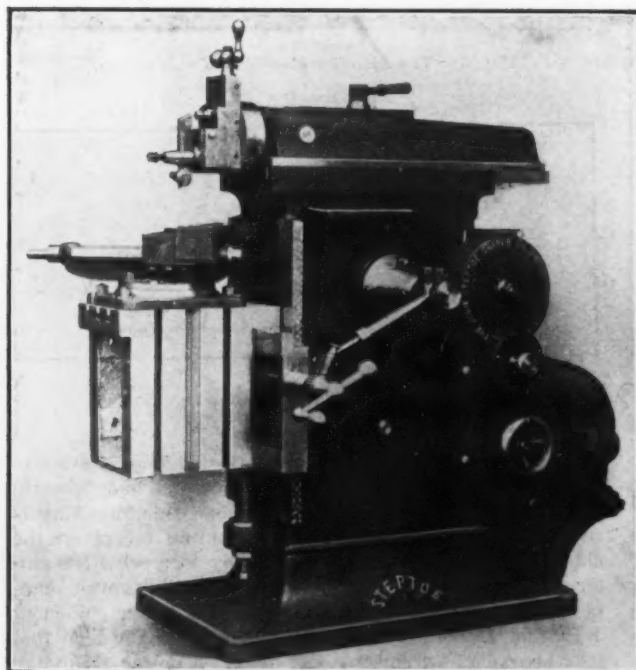


Fig. 1.—A New Shaper Motor Drive Designed by the John Steptoe Shaper Company, Cincinnati, Ohio.

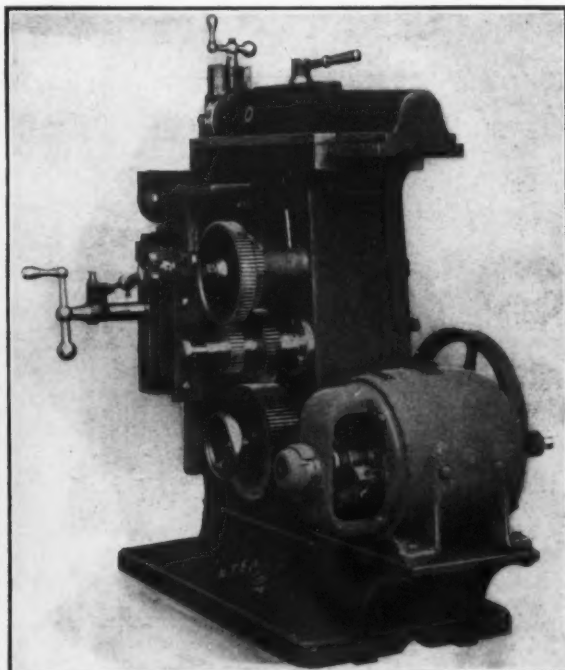


Fig. 2.—Another View of the Steptoe Motor Driven Shaper with the Gear Covers Removed.

pears with the covers inclosing the driving gears, and Fig. 2 a three-quarter rear view in which all of the driving train is exposed. The machine is a 14-in. single geared crank shaper, and the motor a $2\frac{1}{4}$ -hp. variable speed General Electric motor having a speed range of from 750 to 1500 rev. per min. On the motor shaft is a rawhide pinion with brass flanges 2 in. in diameter by $1\frac{1}{4}$ in. face. This pinion meshes with a 16-in. gear on the right side of the machine, as viewed in Fig. 2, giving a gear ratio of 8 to 1. The shaft carrying this gear has a 5-in. bearing on both sides of the column. These bearings are of cast iron and are dowled and screwed to the column against machined surfaces.

On the opposite side of the machine from the large gear is a gear 2 9-16 in. wide, having 88 teeth. This wide faced gear is used to drive the compound gear on the shaft directly above it and allows for shifting the compound gear. The larger gear on the compound gear is 9 in. in diameter by $1\frac{1}{4}$ in. face, and the smaller gear 4 in. in diameter by $1\frac{1}{4}$ in. face. By shifting these gears two changes of speed are secured. When the 4-in. gear is driving the gear directly above it, as shown in Fig. 2, the 6-in. gear is shifted sufficiently far to the right to be out of mesh with the gear above it, but is still in mesh with the wide faced gear beneath it. When the 6-in. gear engages both the gear above it and the wide faced gear, the smaller gear of the compound gear is out of mesh

silt. On the north side a series of eight head gates and penstock tube will conduct the water from the dam to a large steel penstock, 22 ft. in diameter and 2500 ft. long, through which it will be delivered to the site of the power house, situated at Crooked Falls. From the end of this penstock water will be carried through branch tubes to the water wheel units in the power house. The number and size of these units have not as yet been determined.

It is proposed to develop both installations at once, which when concluded will distribute power throughout the northern and western part of the State for mining and manufacturing purposes. The dam at Great Falls will be constructed on practically the same lines as the Rainbow dam, and will be of about the same height. The power house, however, will in this case be located closer to the dam and water from it to the power house will be conveyed through a forebay instead of a long penstock, as in the case of the Rainbow Falls. Details of the water wheel and electrical equipment have not yet been worked out, but work on the dams is now under way, and it is the purpose of the company to continue construction through the winter months in order that power may be turned on the line about October 1, 1909. The engineer in charge of this work is Henry A. Herrick of the firm of Charles T. Main, Boston, Mass., and construction is being superintended by Frank A. Scotten.

The Champion Combination Tool Holder.

In lathes, planers and shapers the Champion combination tool holder, made by the Western Tool & Mfg. Company, Springfield, Ohio, may be used in a variety of ways. Fig. 1 shows the parts of the tool unassembled and, as far as possible, placed in relatively the positions they take when assembled. Figs. 2, 3, 4 and 5 show typical assemblages of the parts for the purposes indicated.

The forms of the different parts are best to be seen in Fig. 1. All of the cutters are self-hardening steel. The shank H is a steel drop forging, case hardened, having a depressed head, the surface of which is provided with circumferential notches and the forward end of the shank with a longitudinal recess. This recess takes the rear end of the cutter when the tool is assembled, as

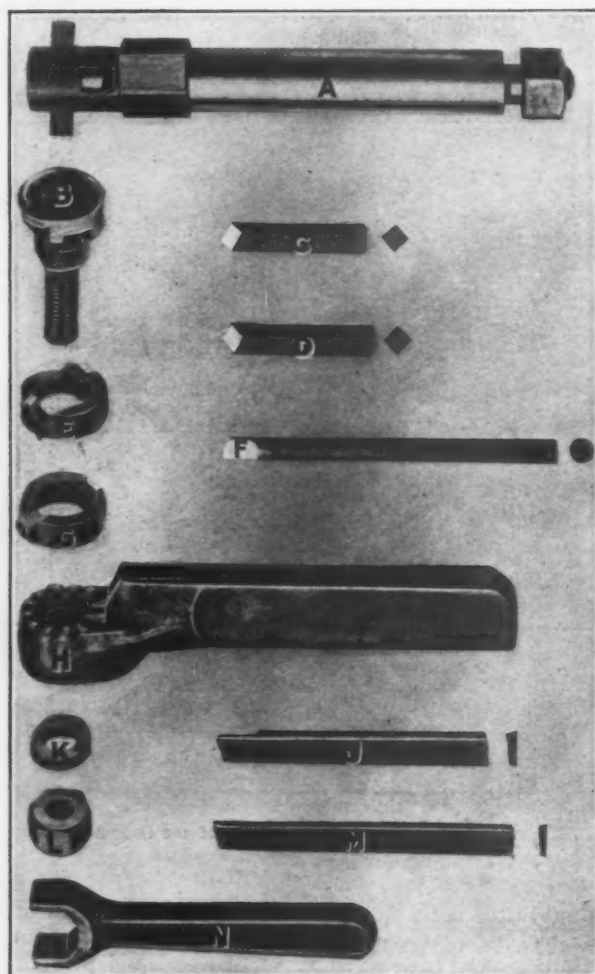


Fig. 1.—The Unassembled Parts of the Champion Combination Tool Holder Made by the Western Tool & Mfg. Company, Springfield, Ohio.

shown in Fig. 2, as a straight turning tool. In this grouping of parts there is placed immediately above the shank head the ring G of Fig. 1, which has two projections on its lower surface to engage in the notches in the shank head, recesses on its upper surface to take square cutters of the forms shown at C and D, Fig. 1, and a supporting lip under the cutting end of the cutter to prevent mashing down the ring or breaking the high speed steel cutters, which are brittle. To hold the cutter the clamping bolt B is placed with its threaded end through ring G, the shank head H and the washer K, and is tightened by the nut L, using the wrench N. The cutter C passes through the transverse square hole in the enlarged end of the clamping bolt B, and when the nut L is tightened the cutter is fixed in any position; for example, as shown in Fig. 2, or it may be turned either to the right or left at any one of several different angles corresponding to the notches on the upper surface of the shank head.

To assemble the tool as a cutting-off tool the ring G

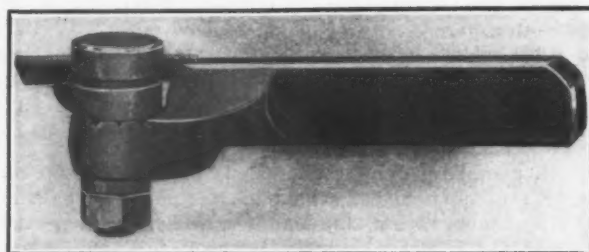


Fig. 2.—The Straight Turning Tool Combination.



Fig. 3.—The Side Turning Tool Combination.

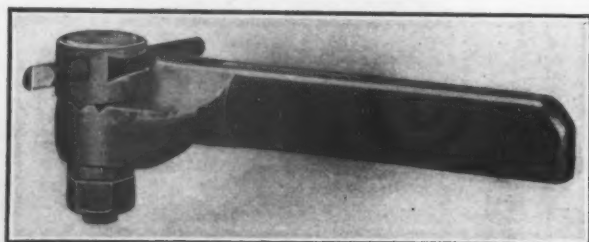


Fig. 4.—The Boring Tool Combination.

of Fig. 1 is replaced by the ring E, which is similar to it as far as the lower face is concerned, but is differently notched on the upper surface. On one side this ring is cut away to form, with a corresponding recess on the clamping bolt head B, a dovetail way to receive the cutter M, as shown in Fig. 3. The latter illustration happens to be that of a side tool using the cutter shown at J in Fig. 1. Either the cutting-off tool or the side tool may be assembled right or left hand. A cutter ground as a threading tool may be similarly used in the holder, but is not shown in the illustrations.

As a boring tool the same ring E is used on the holder, and the cutter F, Fig. 1, is passed transversely through the hole in the clamping head B, so as to rest in the grooves in the upper surface of the ring E. The assembled tool appears in Fig. 4. Here, as before, it is possible to adjust the cutter to different angles by caus-

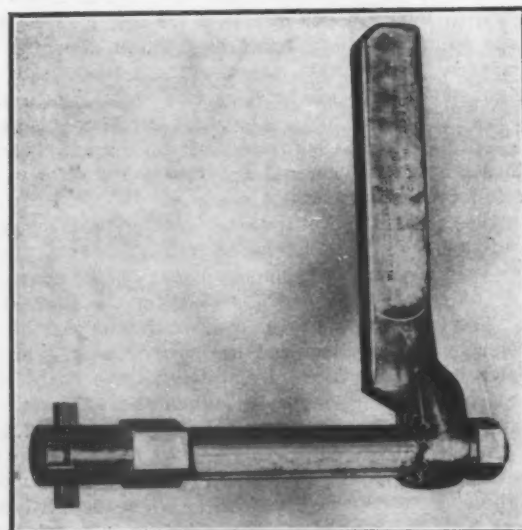


Fig. 5.—The Key-Seating Tool Combination.

ing the projections on the lower face of the ring to engage in different notches in the shank head.

A special combination of the tool, in which the part A, Fig. 1, is used, is illustrated in Fig. 5, this constituting a tool for keyseating the hubs of pulleys, gears, &c., in a planer or shaper. The cutter in the extension A is clamped by the longer nut and may be passed, as shown in both illustrations, at right angles to the axis of A, or it may be inclined by using the other holes in the sleeve and extension, which may be seen in the two illustrations. The nut at the opposite end of the extension is used to clamp the latter to the shank head H, as is plainly shown.

The Champion combination tool is furnished complete, as illustrated, or with any selection of parts to make up such combinations as may be desired.

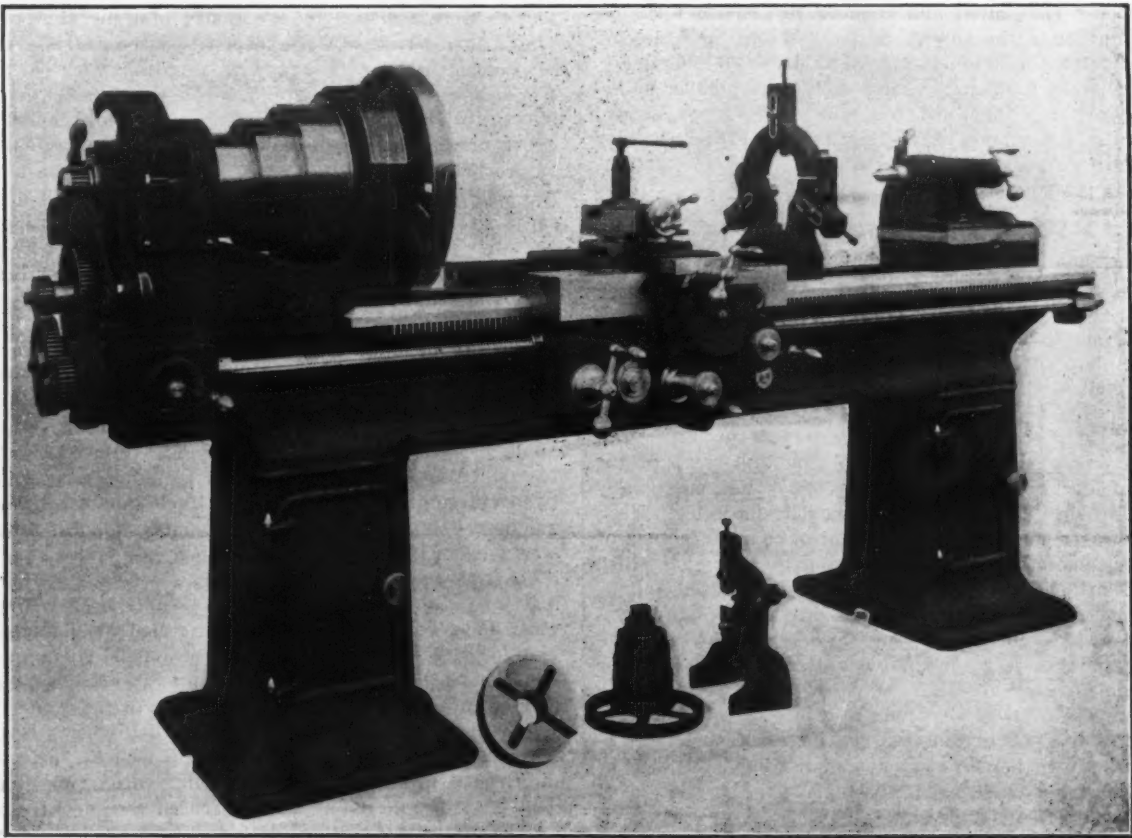
Increased Percentage of Mesaba Ore Shipments.

The statistics of the Lake Superior iron ore movement in September and a comparison of the totals to

Another New Schellenbach Lathe.

All the features of the Schellenbach cone head machine illustrated in *The Iron Age*, October 1, 1908, except the quick change device for cutting threads, are found in the new 18 in. x 8 ft. plain change gear lathe herewith illustrated and built by the John B. Morris Foundry Company, Cincinnati, Ohio.

With the set of 11 change gears provided all standard threads from 2 to 72 per inch can be cut. The feed box is bolted to the bed, and affords three changes of feed for each change gear. When the machine is geared for the finest pitch, the carriage is fed at 0.005, 0.009 and 0.014 in. per revolution of the spindle. This feed change is made through the crank shown on the front face of the speed box below the headstock. A quadrant is fitted to the feed box, and is clamped to it by two screws. The latter and all other adjusting screws on the machine fit the tool post wrench. The change gears are secured to the stud and screw by slip washers, making it unnecessary to remove the nuts when changing the gears. When



A Schellenbach 18 In. by 8 Ft. Plain Change Gear Lathe Built by the John B. Morris Foundry Company, Cincinnati, Ohio.

October 1 for 1907 and 1908 show that the Mesaba range is relatively a larger factor this year than last. This appears from the larger percentages for the ports of Superior, Duluth and Two Harbors this year. As noted last week, the September shipments down the lakes were 4,646,024 gross tons, against 4,749,655 tons in August. In September, 1907, they were 6,217,653 tons. The shipments by ports to October 1 in the two years were as follows:

	To October 1, 1908.	Percent. of total.	To October 1, 1907.	Percent. of total.
Escanaba	2,006,192	12.06	4,473,417	14.64
Marquette	871,107	5.23	2,342,149	7.66
Ashland	1,521,146	9.15	2,722,331	8.91
Superior	2,264,443	13.62	5,571,918	18.23
Duluth	6,201,121	37.29	9,406,283	30.78
Two Harbors.....	3,766,951	22.65	6,043,108	19.78
Totals.....	16,630,960	100.00	30,559,206	100.00

The percentage of the three ports named above, whose shipments are Mesaba ore, apart from the relatively small amount of Vermillion range ore going to Two Harbors, is thus 73.56 this year, against 68.79 in 1907. This is in line with the previous experience that in years of diminished shipments the curtailment is most noticeable in the case of the older ranges.

the crank shown on the face of the speed box is to the right, the clutch connects the lead screw directly with the change gear stem, and the other two positions for this crank connect sliding gears which give two more feed changes.

This machine has a double apron, which includes mechanism for rough chasing all threads without the use of the lead screw. The back gear speeds drive directly to the face plate or chuck, and the highest ratio is 17 to 1. The largest step of the cone pulley is 12 in. in diameter by 3-in. face. This machine is also manufactured in 14 and 16 in. sizes.

Members of the Milwaukee Foundry Foremen's Association were the guests of the Chicago Foundry Foremen's Association on Saturday, October 10, when the two bodies made a visit of inspection to the new steel plants at Gary, Ind.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, is now operating its foundry to full capacity. It recently received a contract for all of the castings for the 42 new puddling furnaces being erected by A. M. Byers & Co., Inc., Girard, Ohio.

The Tariff Revision Classification Problem.

WASHINGTON, D. C., October 13, 1908.—The sub-committee on the classification of the tariff act of the Senate Finance Committee will give a hearing, October 15, in this city, to members of the Board of General Appraisers for the purpose of receiving and discussing a series of amendments to the Dingley act with respect to the classification of a large number of items which are either ambiguously described in the statute or omitted from its provisions. The suggested modifications, it is understood, will also cover the form of certain paragraphs with a view to bringing them into closer conformity with the industrial development that has taken place since the present tariff law was enacted more than 11 years ago. The general scope of these amendments was discussed with the members of the board by Senator Burrows, chairman of the sub-committee, on the occasion of the hearings recently held in New York, but at the chairman's suggestion the proposed modifications are now being elaborated and reduced to definite form for presentation to the sub-committee. While these amendments relate only to classification, it should be understood that they affect the rates on a large number of imported articles, the duties on which, of course, depend upon the provisions of the paragraph in which they may be incorporated as the result of court decisions as to their proper classification.

Classification of Metal Schedule.

The metal schedule is, perhaps, more important than any other division of the tariff act from a classification standpoint, because of the great variety of articles capable of being made directly from the various forms of partly manufactured iron and steel, copper, lead and other metals, and also because of the great progress that has been made in the technique of the industry since the Dingley act became a law. A variety of problems confront the appraising officers and the importers in the case of every imported metal product not specifically enumerated in the tariff act. It may be subject to classification as a manufacture of metal or a manufacture of wire or some other metallic article, or it may be classified by the principle of similitude to an enumerated article, or, in extreme cases, as instanced in the ferroalloy controversy, recourse may be had to section 6, which provides rates of duty for unenumerated manufactured or unmanufactured articles. Obviously, in view of the great confusion which frequently arises in the classification of importations and the great cost of customs litigation both to the Government and the importer, it is of the utmost importance that the text of the present tariff law should be so clarified and simplified as to remove all doubt at least regarding the proper classification of articles concerning which disputes have arisen since the passage of the Dingley act.

Literally hundreds of cases of sufficient importance to be made the basis of court proceedings have arisen during the past 11 years involving the classification of the metal schedule. Some of the more important ones which suggest amendments in the text of the schedule may be briefly referred to. The provision in paragraph 135 for steel bars, being without words of limitation, has been held to be more specific than the provision in paragraph 127 for "forgings of steel not specially provided for," and forged steel bars, therefore, are held to be dutiable under the former provision according to the value per pound, and not as forgings, although there is good reason to believe the framers of the tariff law intended otherwise. In another case steel crank shafts, crank axles, connecting rods, crank pins and crossheads and piston rods, which were forged and subsequently finished or nearly finished in the machine shop, have been held to be dutiable as manufactures of steel not specially provided for under paragraph 193, and not as forgings. It will therefore be seen that the tendency of appraising officers and the courts has been to limit the significance of the term "forging" as narrowly as possible.

Steel Plate Problems.

Certain steel shapes, some flat and some curved with slotted holes drilled through them, have been held to be dutiable as "plates and steel in all forms and shapes not specially provided for" under paragraph 135, and not as "boiler or other plate iron or steel," under paragraph 126. An engraved steel plate mounted like a table top on a frame weighing over five tons and used in the manufacture of plate glass has also been classified under paragraph 135, and not under paragraph 193, which covers manufactures of metal. Steel flour plates made with one side checkered to prevent slipping and claimed to be entitled to entry under paragraph 125, which covers all forms of structural steel, have been held to be dutiable under paragraph 135 as "plates not specially provided for." The same classification under paragraph 135 has been applied to sheets of steel cut to specific shape, according to a sketch and for a special purpose, although the importers claimed right of entry under paragraph 126, as "boiler or other plate iron or steel, sheared." In all these cases covering steel plates, the proper classification was in doubt, and in some cases decisions of collectors were reversed by the Board of General Appraisers or Board rulings were reversed by the courts.

Readers of *The Iron Age* are familiar with the long pending controversy as to the proper classification of sheet steel in strips, which received a bright finish because of the pickling process to which it was submitted before being cold rolled. The Government claimed that the pickling process and the resulting high finish of the strips brought them within the provisions of paragraph 141 for "steel, cold rolled, brightened or polished by any process to such a perfected surface finish or polish better than the grade of cold rolled smoothed only." The importer demonstrated, however, that the process of pickling, which removes the scale and whitens the surface of the steel, was a necessary operation, and was uniformly employed by manufacturers, and on the showing made the Government was defeated in several test cases. In another case cold rolled steel in coils varying from 50 to 200 ft. in length and from ½ in. to 6 in. in width, twenty-five-one-thousandths of an inch thick or thinner, has been held to be dutiable under paragraph 137 for flat steel wire or sheet steel in strips upon evidence that when the Dingley act was passed "sheet steel in strips" was a commercial designation interchangeably used with the term "flat wire" to describe cold rolled steel strips in long lengths. Hoop steel put up in coils 125 ft. in length has been held to be dutiable as such under paragraph 128, and not as cotton ties under paragraph 129, for the reason that, in the opinion of the appraising officers, it does not conform to the restriction "cut to lengths," which is interpreted to mean lengths for baling cotton: It is evident from the decision in these cases that several paragraphs of the metal schedule covering steel strips are in need of revision.

Cylinders and Tubes.

Steel cylinders 4 ft. 20 in. by 19 ft. 8 in., have been held to be dutiable at 45 per cent. ad valorem as manufactures of metal under paragraph 193, and not at 35 per cent. ad valorem as tubes not specially provided for under paragraph 152. Steel cylinders used in the transportation of carbonic acid gas have been held to be dutiable as tubes under paragraph 152, but cylinders 19 ft. in length and 4 ft. in diameter, used for the storage of illuminating gas, have been held not to be tubes, but dutiable as manufactures of metal not specially provided for.

Horseshoe calks have been classified as manufactures of steel under paragraph 193 at 45 per cent. ad valorem, although claimed to be dutiable by similitude to horse shoes under paragraph 163.

The question as to where the line should be drawn in determining whether an old or defective article made of steel is entitled to classification as scrap has caused much litigation. Old steel rails broken into pieces of irregular length and otherwise damaged have been held to be dutiable as scrap under the provisions of paragraph 122, but new steel rails which by reason of certain defects have depreciated in value, but which are still rails

and have not lost their character or identity as such, and which are not shown to be unfit for uses other than as scrap, are held to be dutiable as rails under paragraph 130. Old fish plates worn so as to be unmerchantable are also held to be eligible to entry as scrap steel. Old and worn chains of iron and steel have also been classified as scrap where evidently not in merchantable condition.

Steel wool made from steel wire by a process which results in the destruction of the wire and would make it impossible for the customs authorities to determine the gauge of the wire used, has been held to be dutiable under paragraph 135 for "steel in all forms and shapes," and not to come within the provisions of paragraph 137, which covers articles manufactured from steel wire. On the other hand, diamond steel consisting of fine granules of steel used for stone cutting, has been classified as a manufacture of steel under paragraph 193 and not as "steel in all forms and shapes," as provided for in paragraph 135.

The Ferroalloy Controversy.

One of the most important controversies that has arisen under the metal schedule and which is still pend-

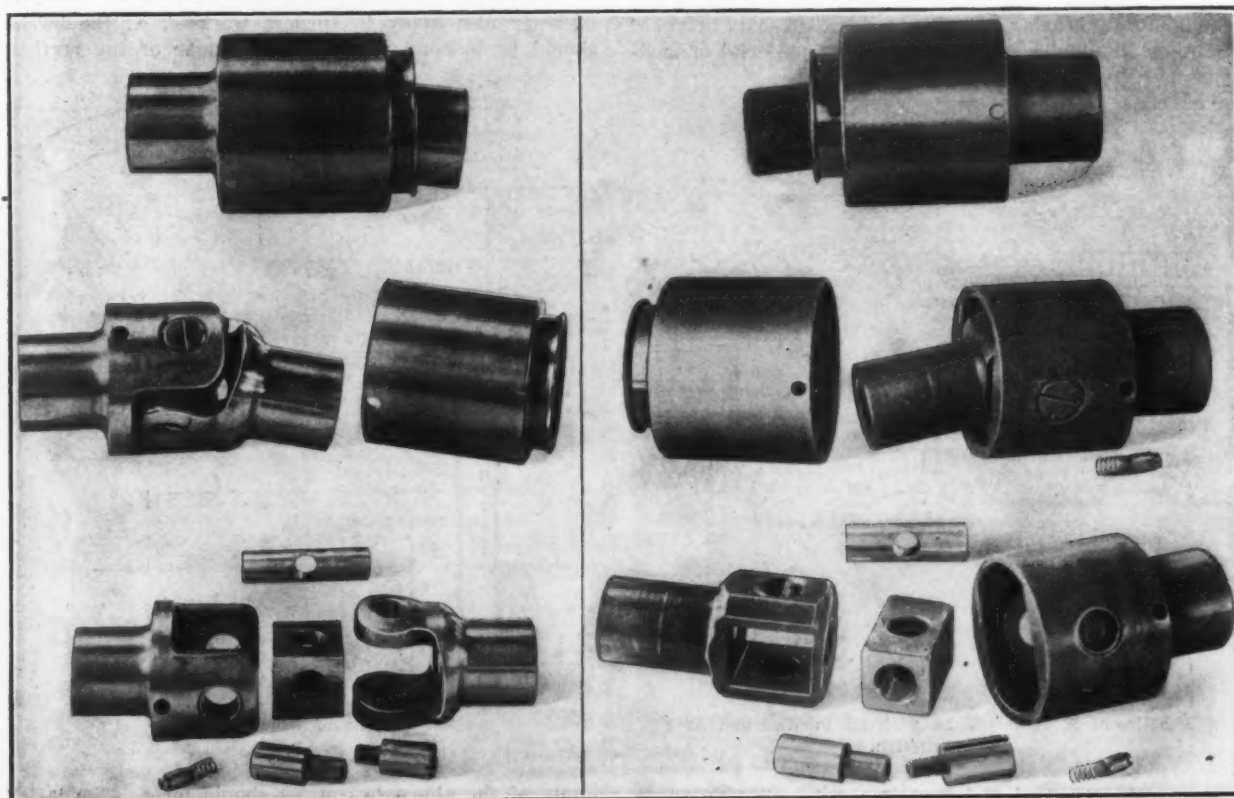
would furnish adequate protection for any newly discovered alloy that may come on the market in the future.

W. L. C.

Two New Kinsler-Bennett Universal Joints.

The Kinsler-Bennett Company, Hartford, Conn., is bringing out two new universal joints, known as Types D and E, herewith illustrated. Both are designed particularly for automobile and motor boat transmissions of light and medium type, but are applicable to other machinery in general.

In Type D the joint is of simple construction, with forks of steel forgings in which are inserted hardened steel bushings. The block and pins are also of hardened steel; in fact, all working parts are thus treated, insuring long wearing qualities. The pins, $\frac{3}{4}$ in. in diameter, afford a large wearing surface. The joint has a dustproof steel cover held in place by a spring plug. The cover, fitting the outside of the yoke, serves to make a stiffer joint. The diameter of the joint is 3 in. and that of the case $3\frac{1}{4}$ in.



Type D.

Type E.

Two New Universal Joints Made by the Kinsler-Bennett Company, Hartford, Conn.

ing in the courts, is the dutiable classification of certain ferroalloys known as ferrochrome, ferrovanadium, ferromolybdenum, &c. Notwithstanding that some of these products are valued at upward of \$500 per ton, they have been held by the United States Circuit Court of Appeals to be entitled to entry at a duty of \$4 per ton by similitude to ferromanganese, which is specifically enumerated in paragraph 122. The Government has contended for a classification for these products as "metals, unwrought" or as "unenumerated manufactured articles," both of which are provided for at the rate of 20 per cent., and a third test case is now being prepared with a view to carrying the issue to the United States Supreme Court. When the Dingley act was passed very little use was made of the ferroalloys referred to, and none of them were being produced in the United States on a commercial scale. The manufacture of ferrochrome by electric smelting has since been undertaken, but it is claimed cannot be continued if the imported article can be brought in on the basis of a \$4 duty. There is no doubt that the new tariff act will provide an accurate classification for the ferroalloys, probably on an ad valorem basis, which

In the Type E joint the body is a casing in which are inserted hardened steel bushings. The sleeve, or yoke, has a rectangular opening in which is held a hardened steel block. The joint is held together by a $\frac{3}{4}$ -in. pin. All working parts are hardened. Like the Type D, this joint has a dustproof steel cover, held in place by a spring plug. The diameter of the joint is 3 in. and of the casing $3\frac{1}{4}$ in. The unassembled views of both joints show a threaded portion on one of the short pins. The design of this has been changed, and will hereafter be made with a long plain shank which will telescope into the other short pin, making it practically one piece. Thus the joint will be entirely without screws.

The Superior Steel Company, Carnegie, Pa., manufacturer of hot and cold rolled strip steel for drawing and stamping purposes, is completing a new and modern 16-in. hot rolling department, and expects to place it in operation about December 1. This addition will permit the company to roll all widths and thicknesses in strip steel from 6 to 16 in. wide and will increase the capacity of the plant about 50 per cent.

Heating and Melting Furnace Work.

Shape Brick and Methods of Calculating Requirements.

BY ULRICH PETERS.

A subject to which perhaps the least attention is paid in practical or theoretical discussions by engineers is that of the detailed construction and arrangement of bricks in furnaces, flues and foundations. Usually the mill brick-layer is supplied with no other information than an outline drawing of the furnace and flues he is about to build or rebuild. Detail questions generally come up when the roof arch or some other part of the furnace falls in—sometimes almost before the light of its fire is seen. The old time method of chipping bricks to suitable shapes has been abandoned almost entirely by adopting shape bricks, and in order to obtain practical gas tight walls of greater strength all necessary cutting to exact dimensions should be done by grinding. This gives better results in quality of workmanship and economy of labor.

The building of the different parts of the furnace has an important bearing on its life. So-called shape bricks of the best obtainable grade of refractory material of mod-

would result from adopting $2\frac{1}{4}$ in. in thickness instead of $2\frac{1}{2}$ in. The stretcher as well as the header courses, being then multiples of the individual dimensions, would match in all the various combinations for plain wall constructions. Firebrick, as well as the common red brick, are usually undersize and laid with very little clay mortar; if possible, rubbed close at the joints. Therefore little or no allowance is given for the vertical joints in the following standard thickness table:

Thicknesses of Brick Walls.

	Inches.		Ft. In.
$\frac{1}{2}$ brick thick.....	$4\frac{1}{2}$	$2\frac{1}{2}$ bricks thick.....	2 0 $\frac{1}{4}$
1 brick thick.....	9	3 bricks thick.....	2 3
$1\frac{1}{2}$ bricks thick.....	$13\frac{1}{2}$	$3\frac{1}{2}$ bricks thick.....	2 7 $\frac{1}{2}$
2 bricks thick.....	18	4 bricks thick.....	3 0
$2\frac{1}{2}$ bricks thick.....	$22\frac{1}{2}$	&c.	

For the horizontal joints of the courses of furnace masonry about $\frac{1}{4}$ in. for mortar is allowed, so that the heights of brick walls are as follows:

	Inches.		Inches.
1 course high.....	$2\frac{1}{2}$	5 courses high.....	$13\frac{1}{4}$
2 courses high.....	$5\frac{1}{4}$	6 courses high.....	16
3 courses high.....	8	9 courses high.....	24
4 courses high.....	$10\frac{1}{2}$	&c.	

The rules governing the construction of building masonry also apply in furnace work—i. e., the bricks should be in bond and if possible none of the vertical

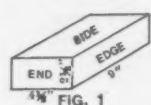


FIG. 1

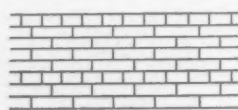


FIG. 2

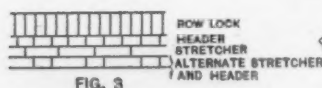


FIG. 3

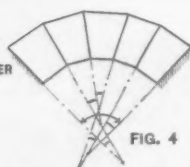


FIG. 4

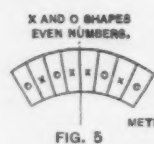


FIG. 5

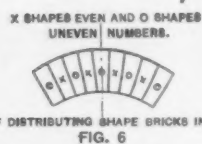


FIG. 6

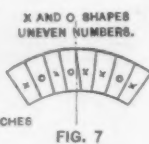


FIG. 7

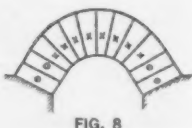


FIG. 8

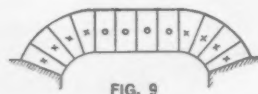


FIG. 9

The Use of Straight and Shape Brick in Wall and Arch Construction.

erate sizes are used and kept in stock. Suitable ready made shapes have been in practical use for years for building up and repairing walls, ports and arches in the least time and with the least cutting and trimming of the bricks. Most of the geometrical brick shapes have in the interval progressed to certain standard dimensions, commonly called "stock shapes." Sizes vary more or less with the maker and the composition of the refractory material, which may have a different coefficient of expansion and contraction in the process of manufacture. So far only the natural tendency has been followed in the adoption of these standard forms, and no attempt seems to have been made to investigate for the best geometrical forms or those giving the greatest number of combinations with the smallest number of different stock shapes. Complicated and irregular shapes are avoided as much as possible in furnace construction, as they are liable to cracks and distortions, and not being specially re-pressed are not as strong as the sizes now in common use.

Standard Shapes.

The adopted standard mill size of a straight furnace brick in the United States measures 9 in. in length, $4\frac{1}{2}$ in. in width and is $2\frac{1}{2}$ in. thick. As a stock shape it is commonly known as "9-in. straight," and is shown in Fig. 1. Evidently a greater number of combinations

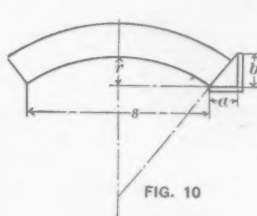


FIG. 10

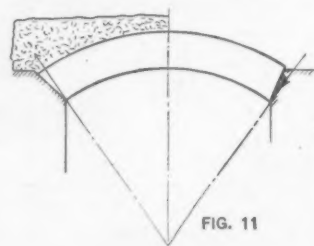


FIG. 11

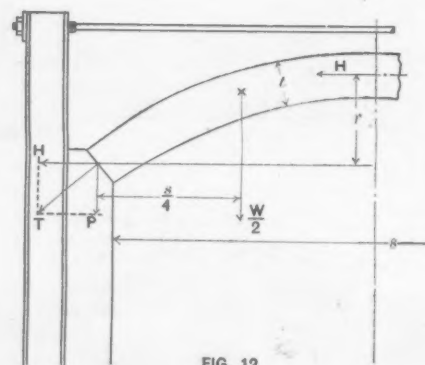


FIG. 12

Details of Skewbacks.

joints of the alternate courses should meet. The latter rule is, however, not strictly observed in the bond usually employed in furnace walls, in which for five to nine rows of alternate stretchers one row of header is used as face bond, Fig. 2. It takes much less time to build and practically answers the purpose as well as a better bond, being more or less temporary as compared with the life of furnaces in general. As a rule all brickwork should be topped off with headers or a row lock, Fig. 3, to prevent the breaking out or falling out of bricks in the top layer.

The principal tapering shapes are further known as wedges, side arch and key bricks. In the wedge shape the sides taper toward the ends, while in side arches the sides taper toward the edges. Both shapes are extensively used in forming arches and circles. The key brick, whose edges taper toward the ends, are the shapes mainly employed for circular walls of coke ovens, lining of blast furnaces, &c. The accompanying table of taper bricks will be found convenient for practical reference. Other very important shapes are enumerated in a separate table.

Rules for the Construction of Arches and Circles.

The construction of furnace arches according to best practice involves several problems. Arches and circles of various radius or diameter are built by proper com-

binations of the different taper bricks and the use of straights for enlarging. Evidently the sum of the included angle of all the single bricks equals the total angle of the arch between the skewbacks, as in Fig. 4. For a complete circle the total angle is naturally 360 degrees, and the sum of all the taper brick angles used to form the circle will have to check up with the total angle of the circle. This gives us an easy method for figuring the proper angle of skewbacks, also a quick method by which to choose the taper and number of bricks to suit a certain skewback.

The accompanying table gives the number of brick required to form circles of various diameters and is intended for ready reference. For circles in general the

of two plans. The first is to make a test by the conditions involved in the equation

$$c = ax + ey,$$

which is to say, the length of the inside arc should equal the sum of the *a* and *e* lengths of the X and Y bricks used. Further, the sum of the angles of these shapes should equal twice the complementary angle of the skewbacks—i. e.:

$$\Sigma < (x + y) = 180 - 2a.$$

By a few trials it will be possible to arrive at figures checking with both equations.

The other plan is more direct and much similar to the former calculation of circles. Here the length of the outer arc C and that of the inner arc c, previously cal-

SKETCH	DIMENSIONS				NAME	INCLUDED ANGLE	NO. OF BRICK TO THE CIRCLE	INSIDE CIRCLE
	A	B	C	D				
	9	4 1/2	2 1/2	1 7/8	No. 1 WEDGE	3° 32'	102	
	9	4 1/2	2 1/2	1 1/8	No. 2 WEDGE	6° 21'	56	
	9	4 1/2	2 1/2	2	No. 3 WEDGE OR BULLHEAD	8° 10'	113	
	9	6 3/4	2 1/2	1 1/2	No. 2A WEDGE	6° 21'	56	
	9	6 3/4	2 1/2	2	No. 3A WEDGE	3° 10'	113	
	9	13 1/2	2 1/2	1 1/2	No. 2 WEDGE TILE	6° 21'	56	
	9	13 1/2	2 1/2	2	No. 3 WEDGE TILE	3° 10'	113	
	9	13 1/2	3 1/2	2 1/4	18 1/2" ARCH 1			
	9	4 1/2	2 1/2	2 1/8	No. 1 SIDE ARCH	5° 0'	72	
	9	4 1/2	2 1/2	2	No. 1A SIDE ARCH	6° 21'	56	
	9	4 1/2	2 1/2	1 3/4	No. 2 SIDE ARCH	8° 23'	42	
	9	4 1/2	2 1/2	1 1/2	No. 2A SIDE ARCH	12° 40'	28	
	9	4 1/2	2 1/2	1	No. 3 SIDE ARCH	18°	20	
	9	4 1/2	4	2 1/2	No. 1 KEY	3° 10'	113	
	9	4 1/2	3 1/2	2 1/2	No. 2 KEY	5° 43'	63	
	9	4 1/2	3	2 1/2	No. 3 KEY	9° 43'	38	
	9	4 1/2	2 1/4	2 1/2	No. 4 KEY	14° 24'	25	
	9	6	5 3/8	2 1/2	9 X 6 KEY			
	9	6 1/2	4 1/2	2 1/2	No. 1 CIRCLE	30°	12	33"
	9	7 3/16	4 1/2	2 1/2	No. 2 CIRCLE	25° 24'	14	45"
	9	7 3/8	4 1/2	2 1/2	No. 3 CIRCLE	20°	18	51"
	9	6 7/16	6	3	No. 1 CUPOLA BRICK	24°	15	30"
	9	6 3/4	6	3	No. 2 CUPOLA BRICK	21° 10'	17	36"
	9	7 3/16	6	3	No. 3 CUPOLA BRICK	17° 10'	21	48"
	9	7 1/2	6	3	No. 4 CUPOLA BRICK	14° 24'	25	60"

SKETCH	DIMENSIONS			NAME	INCLUDED ANGLE
	A	B	C		
	9	4 1/2	2 1/2	9" STRAIGHT	
	9	4 1/2	1"	1" SPLIT	
	9	4 1/2	1 1/4	1 1/4" SPLIT	
	9	4 1/2	1 1/2	1 1/2" SPLIT	
	9	4 1/2	2"	2" SPLIT	
	9	2 1/4	2 1/2	SCAP	
	9	2 3/4	2 3/4	CHECKER BRICK 2	
				BLOCKS AND STRAIGHTS 3	
				FEATHER EDGE 4	29° 3'
				EDGE SKEW OR	18° 26'
				No. 3 SKEW	
				No. 1 SKEW 5	41°
				BEVEL END 5	51° 20'
				BEVEL EDGE 5	48° 20'
				7 X 7 SKEW BACK	45°
				7 X 9	36° 25'
				9 X 9	45°
				9 X 12	36° 1 1/2'
				18" REGENERATOR TILE 6	
				21"	
				22"	
				24"	
				27"	
				JAMB 7	

1. IN ALL TAPERS.
2. FOR REGENERATIVE FURNACES.
3. ALL SIZES.
4. FOR INCLINED WELLS AND SKEWBACKS, ETC.

5. SAME AS FEATHER EDGE.
6. USED FOR SUPPORTING CHECKER WORK OF REGENERATIVE FURNACES.
7. USED AROUND DOOR OPENINGS.

Details of Various Shape Brick Used in Furnace Construction.

number of taper bricks is derived from the equations below, wherein

- r* = the inner radius of circle in inches.
t = the thickness of circle in inches.
x = the number of adopted X shapes tapering *b* to *a* inches.
y = the number of adopted Y shapes tapering *d* to *e* inches.

The outer circumference is then

$$C = 2\pi (t + r) = bx + dy,$$

and the inner circumference

$$c = 2\pi r = ax + ey.$$

Solving both equations for *x*, we have:

$$x = \frac{2\pi (et - dr + er)}{cb - ad}.$$

Or

$$x = \frac{2\pi (et - bt + er)}{b(e - a)}.$$

if *d* equals *b*, as is ordinarily the case.

For the number of Y shapes we have similarly:

$$y = \frac{2\pi (at - br + ar)}{ad - cb}$$

and

$$y = \frac{2\pi (at - br + ar)}{b(a - e)}$$

if again *d* equals *b*.

The figuring of arches having the span *s*, the rise *r* and the angle *a* of skewbacks can be conducted on one

culated from tables, are substituted in the general equation

Or for

$$x = \frac{eC - dc}{cb - da}$$

Or for

$$y = \frac{aC - bc}{ad - be}$$

It is much quicker and more accurate for the determination of the number and sizes of shapes required in an arc to use a little of the simple mathematics given than to rely only on a big scale layout, which according to the experience of the writer is seldom practically close enough.

After knowing the exact number of brick shapes required for an arch, it is necessary to distribute them in such a manner as to form a symmetrical arch, Figs. 5, 6 and 7, also a strong arch. From the sketches of arches in Figs. 8 and 9 it is evident that even though both the same kind and number of shapes are used, the arch in Fig. 8 will be much stronger than the other. In distributing the shapes the tendency should be to throw those of greater taper toward the crown of the arch. Under any conditions a practical bricklayer will never use a greater number of straights than about 50 per cent. of the total required for an arch. Straights and taper brick should interchange as much as possible and two straights should be avoided, because they often cause

the easy slipping out of single bricks and the consequent failures of arches.

The most natural form of a roof and such arches as are not subjected to other loads is the curve in which a perfectly flexible rope will hang—i. e., the catenary curve. Building a flat roof arch to the customary circular form of the false work is really not a mistake, for under the high temperature any arch will change its curvature and rise from the influence of the expansion of the bricks and tend to open up at the joints of the back, in many instances also causing the collapsing of a roof arch. Sand distributed on top serves here as the only effective means of keeping the arch bricks relatively in place, besides helping greatly to hold the heat in the furnace.

With respect to the proper choice of skewbacks, there

INSIDE DIAMETER OF CIRCLE	WEDGE BRICK				SIDE ARCH BRICK				KEY BRICK			
	NO. 5 TAPER 2 1/2" TO 1 1/2"	NO. 8 TAPER 2 1/2" TO 2"	9 INCH STRAIGHT	TOTAL	NO. 2A TAPER 2 1/2" TO 1 1/2"	NO. 1A TAPER 2 1/2" TO 2"	9 INCH STRAIGHT	TOTAL	NO. 4 TAPER 4 1/2" TO 2 1/2"	NO. 8 TAPER 4 1/2" TO 3"	NO. 2 TAPER 4 1/2" TO 3 1/2"	NO. 1 TAPER 4 1/2" TO 4"
1'-1 1/2"					28			28				
1'-3"					25 1/2	5 1/2		31				
1'-6"					23	11		34	25			25
1'-9"					18 1/2	19		37 1/2				27 1/2
2'-0"					14	27		41	17	13		30
2'-3"	56			56	11	34		45				32
2'-6"	51	9		60	8	41		49	9	25		34
2'-9"	48 1/2	15 1/2		64	4	48 1/2		52 1/2				36
3'-0"	46	22		68		56		56		38		38
3'-3"	42 1/2	29		71 1/2		56	4	60				40
3'-6"	39	36		75		56	8	64		32	10	42
3'-9"	35	44		79		56	11 1/2	67 1/2				44
4'-0"	31	52		83		56	15	71		25	21	46
4'-3"	26	60 1/2		86 1/2		56	19	75				48 1/2
4'-6"	21	69		90		56	23	79	19	32		51
4'-9"	18 1/2	75 1/2		94		56	26 1/2	82 1/2				53
5'-0"	16	82		98		56	30	86	13	42		55
5'-3"	10 1/2	91		101 1/2		56	34	90				57
5'-6"	5	100		105		56	38	94	6	53		59
5'-9"	2 1/2	106 1/2		109		56	42	98				61
6'-0"		113		113		56	46	102		63		63
6'-3"		113	3 1/2	116 1/2								65
6'-6"		113	7	120					58	9		67
6'-9"		113	11	124								69
7'-0"		113	15	128								71
7'-6"									47	29		76
8'-0"									42	38		80
8'-6"									37	47		84
9'-0"									31	57		88
9'-6"									26	66		92
10'-0"									21	76		97
10'-6"									16	85		101
11'-0"									11	94		105
11'-6"									5	104		109
12'-0"										113		113
12'-6"										113		117

Table of Brick Required for Various Circles.

are several points to consider. In the first place, having regard to scientific correctness, the skewback line should be radial. But this condition is not practicable where it is desirable to have only a limited number of stock shapes at hand. For radial skewbacks the ratio of the rise r to the span s will be, as in Fig. 10:

$$\frac{r}{s} = \frac{\sqrt{a^2 + b^2} - b}{2a}$$

For 45-degree skewbacks $a = b$ and

$$\frac{r}{s} = 0.207.$$

The furnace builder will keep in mind, when not meeting the above conditions exactly, that a low skewback, shown to the left of Fig. 11, is better adapted for underground or loaded arches, such as flues, &c., while for arches not loaded, as in the case of roof arches, a slightly higher

skewback, as shown on the right of Fig. 11, is to be recommended on account of its greater wedging action.

Roof Arch Binding.

Roof arches exert a considerable thrust on the skewbacks, Fig. 12. This thrust per running foot of arch has two components, the horizontal thrust H and the vertical thrust P , which latter is simply equal to half the total weight of the roof arch. As seen in the figure, the horizontal thrust component is figured from the approximate relation

$$H = \frac{W s}{8 r}$$

to

$$H r = \frac{W}{2} \times \frac{s}{4}$$

And substituting for the weight $W = 128 \times s \times t$, if 128 is the weight of brick of 1 cu. ft.,

$$H = \frac{16 t s^2}{r}$$

In which t = thickness and r = rise of arch in inches and s = span in feet. It is easy to proportion from the above formulas the spacing of buckstaves and the size of tie rods.

Swedish Iron and Steel Production in 1907.

The production of various forms of iron and steel in Sweden in 1907 differed but slightly from the totals in 1906. The number of furnaces in blast last year averaged 130, against 128 in 1906. The following statistics, which are in metric tons, are from official sources, as given in the *Bulletin* of the American Iron and Steel Association:

	1907.	1906.
Iron ore.....	4,480,070	4,502,597
Coal	305,338	296,980
Pig iron.....	615,778	604,789
Charcoal blooms from pig iron.....	174,405	178,298
Bessemer ingots and castings.....	77,036	84,633
Open hearth ingots and castings.....	341,893	311,435
Crucible ingots and castings.....	1,287	1,457
Bilster steel.....	416	522
Total steel.....	420,632	398,047
Bar iron and steel.....	198,533	206,124
Nail and wire rods and bands.....	139,240	125,051
Other shaped iron and steel bars.....	15,025	11,965
Plates, not including sheets.....	21,246	21,063
Tube blocks, hollow blooms, billets.....	44,975	28,880

The pig iron exports from Sweden were about 129,800 metric tons in 1907, against 112,200 tons in 1906. The exports of merchant bars last year amounted to 154,200 tons, as against 194,400 tons in 1906.

A New Oliver Surfacer.

A new product of the Oliver Machinery Company, Grand Rapids, Mich., is a four-roll, double belted, single cylinder, cabinet surfacer, capable of feeding at the rate of 15, 20, 25 and 33 ft. per minute. The machine is made in three widths, to plane 24, 26 and 30 in. wide, and the bed will lower to plane material from 1-16 to 7 in. thick. It may be used as a fine surfacer on finished material or as a roughing planer, and is therefore fitted for pattern shops, planing mills, novelty works, piano factories, railroad shops and Government works. Motor drive may be applied if desired.

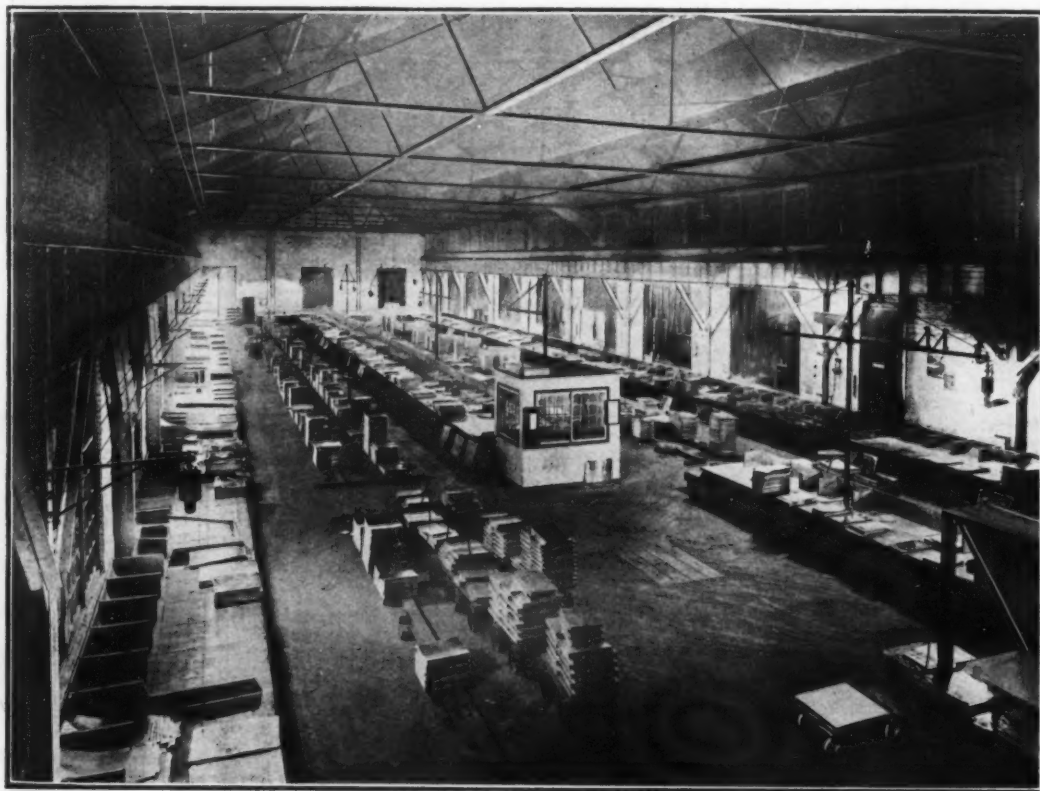
The Milwaukee Locomotive Mfg. Company, North Milwaukee, Wis., is finding an active demand for its gas locomotives, used for freight transfer uses in a variety of manufacturing plants. Engines have recently been shipped to New Orleans for use on a cotton plantation, and to Hobart, Cal., for the Sierra Nevada Lumber Company. Another engine is being completed to go to the Postal Milling Company, St. Louis. The engines have been given severe tests in hauling loaded freight cars, and the company reports many inquiries concerning their use for local shipping yards.

Tin Plate Assorting Room Illumination.

To properly light the assorting rooms of tin plate works is difficult because of the very exacting requirements. The illuminant must be low in intrinsic brilliancy so that the reflection from the tin plate will not be a glare in the eyes of the inspectors, making the examination faulty and uncertain. Shadows must be eliminated as much as possible, so that there may be the same intensity of illumination on the entire surface of the plate. It is also necessary that over all the tables the light be of uniform intensity, because those assorting the plates are continually moving from table to table, and if the light is not of the same intensity in different localities defective plates may be passed and perfect ones condemned. To insure correct assorting it is essential that the illumination be of even distribution throughout the entire working part of the room.

The ordinary 16-candlepower incandescent lamps are

tion. These benches are 6 ft. wide and stand about 29 in. from the floor. When incandescent lighting was used 210 16-candlepower lamps were required; these consumed 56 watts per lamp and were supplied with current at 220 volts. On one side of the room it was necessary to burn 90 lamps, 24 hr. per day, 300 days per year, making 7200 hr. per lamp per year; the balance of the lamps, 120 in number, burned 10 hr. per day, or 3000 hr. per year, making a total of 1,008,000 burning hours per year for all lamps. At 56 watts per lamp, the annual power consumption was 56,448 kw.-hr., and at 1½ cents per kilowatt-hour cost \$846.72. The total candlepower for the room was about 3360, assuming that all the lamps were up to the standard photometer test. The average life of the incandescent lamp is 800 hr., so it was necessary to use 1260 lamps each year, costing 18 cents, or \$226.80. The total cost for current and maintenance with incandescent lamps was, therefore, \$1073.52 per year. These lamps were placed about 3½ ft. apart and



View in the Assorting Room at the Monessen Works of the American Sheet & Tin Plate Company, Showing the Present Lighting Equipment of Cooper Hewitt Lamps.

most universally used, and in considerable number, to obtain satisfactory results. They are open to the objections, however, that they are not always of the same intensity and quality (a new lamp will be much brighter than an old one), and that it is hard to secure uniform distribution throughout the room.

The Cooper Hewitt lamp, when properly placed, has been found to overcome many of the former difficulties and can be adopted throughout the plant. As will be seen from the illustration herewith, which shows the interior of the assorting room at the Monessen, Pa., works of the American Sheet & Tin Plate Company, shadows are almost entirely eliminated. This is due in part to the wide diffusion of the light, the source being a bar, in this case 21 in. long, instead of a spot. The location of the lamps also has much to do with eliminating shadows.

An advantage of the Cooper Hewitt system of lighting over arc or incandescent lighting is that little or no care is necessary to keep the lamps in operating condition; the occasional replacing of a tube is all that the lamps require. There are less moving parts than in any arc lamp and absence of complicated mechanism is obviously desirable.

The room in the plant referred to is 200 ft. long by 60 ft. wide, and the assorting benches are placed around the walls and down the center, as shown in the illustration.

were hung about 4½ ft. above the tables. No reflectors were used.

This equipment has been replaced with 34 type H automatic lighting Cooper Hewitt lamps, which are designed to operate in series on 110 or 220 volts; 14 of these lamps burn 24 hr. per day, 300 days per year, and 20 lamps burn 10 hr. per day, 300 days per year, making a total of 160,800 burning hours for 34 lamps. At 192 watts per lamp the current consumption per year is 30,873.6 kw.-hr., and at 1½ cents per kilowatt-hour costs \$463.10. The maximum cost of maintenance is guaranteed by the lamp manufacturer not to exceed one tube per lamp per year, or, in this case, \$268.94. This is the maximum, but based on the average life of tubes in commercial installations, the actual cost may fall considerably below this figure. The candlepower of the Cooper Hewitt equipment is 10,200.

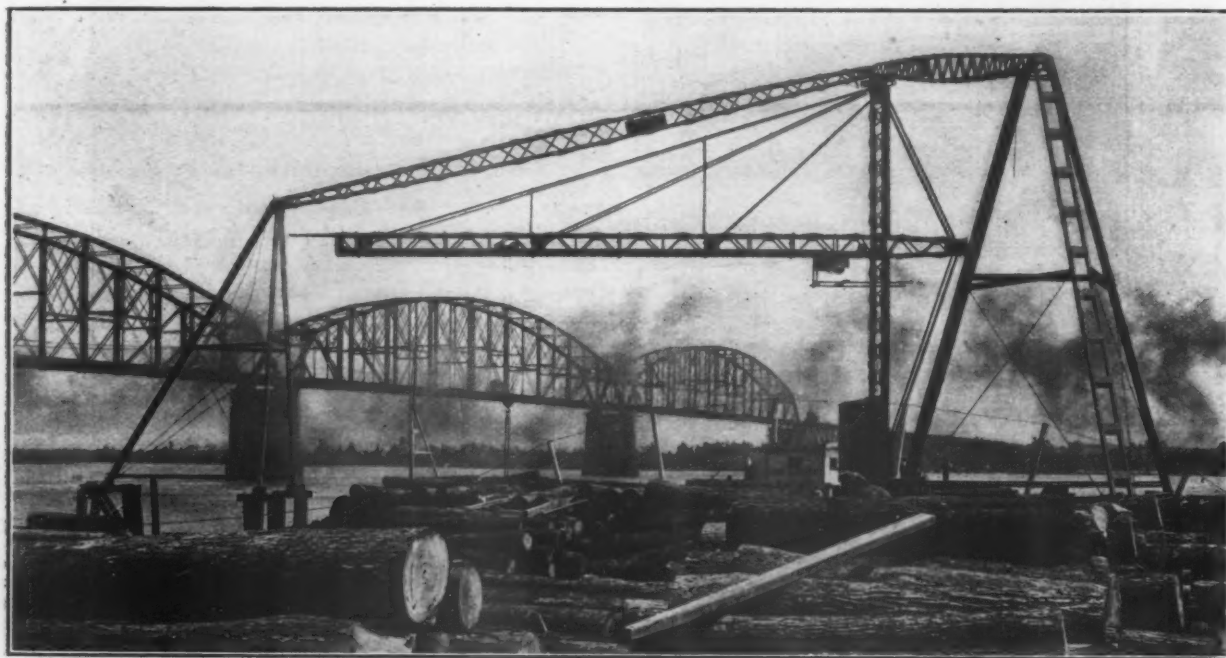
The locations and positions of the Cooper Hewitt lamps are shown in the engraving. They are suspended from heavy iron poles and brackets, and are controlled by several switches on a board centrally located, so that if one portion of the room is to be lighted it is not necessary to light all. Each lamp is equipped with a white enameled reflector, which gives a proper distribution of light downward.

By adopting these lamps in this installation the quality of light is greatly improved and the quantity in-

creased more than threefold with a net saving of at least \$341.48 per year, and the number of defective plates passed has been greatly reduced.

A Northern Electric Crane Derrick.

A view of an interesting electric crane derrick recently installed in the yard of the St. Louis Basket & Box Company, St. Louis, Mo., by the Northern Engineering Works, Detroit, Mich., is shown in the accompanying illustration. The derrick has an effective radius of 75 ft. The mast is 60 ft. high, and the load lifting capacity is 5 tons. The derrick is supported by steel stiff legs and steel standards, and the entire derrick frame is constructed of structural steel. Three direct current motors supplied with current at 110 volts independently operate the three movements of the machine. The hoisting speed is 60 to 120 ft. per minute, the trolleying speed 125 to 150 ft. per minute, and the swinging speed at the rate of one to two revolutions per minute. The gearing throughout is of



An Electric Crane Derrick for Handling Logs, Built for the St. Louis Basket & Box Company by the Northern Engineering Works.

steel. The load is held at any height by a type of mechanical screw brake and electric brake.

This derrick is employed for handling logs in the yard of the company before mentioned, and is located on the river bank, so that it may handle the material from the river to the factory yard. The photograph was taken at high water, at which stage of water the entire contract was erected. It will be noticed that the trolley travels between the latticed girders of the jib. A suitable inclosure is provided for the mechanism and the operator to give protection from the weather.

A protest has been made by engineers against the decision of the British Local Government Board relative to reinforced concrete structures. This board, which supervises construction work in all the municipalities of England, has fixed the period for repayment of loans on reinforced concrete structures built by municipalities at 15 years, while for stone, brick, steel and even for concrete unreinforced by steel the loan period is 30 years. A higher tax rate is thus imposed in the case of reinforced concrete construction.

Hannah Furnace of the Republic Iron & Steel Company, at Youngstown, Ohio, is being repaired and put in shape for blast, but it will not be started in the near future, unless it is necessary to blow out No. 3 stack at Haseltou, for relining. If that stack continues to work properly, Hannah Furnace will remain idle.

Monel Metal.

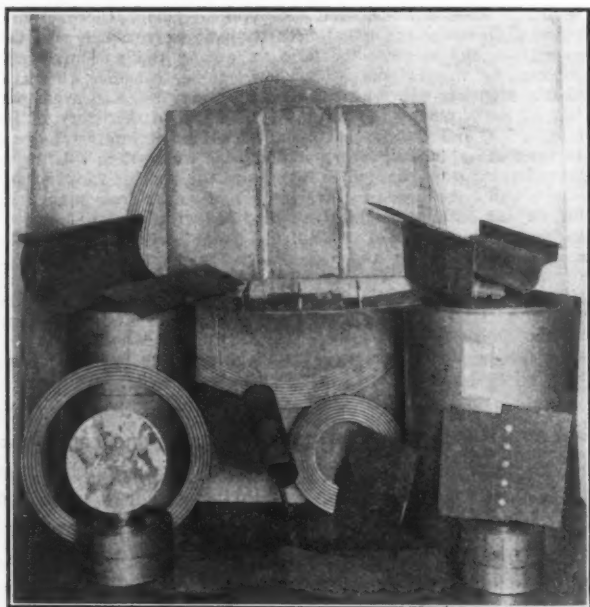
A New Metal for the Sheet Metal Worker.

A new metal which, to speak conservatively, promises much to the sheet metal worker, has been produced under the name Monel Metal. So far as the worker in sheet metal is concerned, particularly the roofer, the metal is of special interest as a product meeting the requirements of copper as a roofing material without the shortcomings of that metal. It is composed roughly of 72 per cent. nickel, 1½ per cent. iron and the remainder copper, and has shown a remarkable resistance to acid or other corrosion, which bespeaks the high degree of resistance to weather conditions needed in a roof. It has the correspondingly important property, particularly as compared with copper, of showing relatively smaller expansion and contraction changes, so that the matter of taking care of changes in the length of the sheets for different outside temperatures is not a problem. It possesses a high de-

gree of ductility and flexibility, so that it can be formed up to suitable shapes and bent into such locks as go, for example, with the standing seam roofing, and it can readily be soldered and admits of the use of a killed acid as a flux, another detail of practical importance. In appearance it looks not unlike sheet zinc, and while a little tougher to cut than sheet copper, it does not, with good snips, show the characteristic burrs or edges commonly obtainable when handling zinc.

Some idea of its scope of use as a sheet metal may be gained from the accompanying reproduction of a photograph. On each side toward the background is a roll of the metal given an unusually smooth finish, this being another attractive feature of the metal, namely, that on account of its large nickel content, it can be readily polished. Moreover, the metal seems not to be affected by the atmosphere, as stated, for such darkening as the polished surface may take on is readily removed with the rubbing by the finger, bringing out the bright luster of polished nickel. On top of each of these rolls is seen a form of gutter, this to indicate the practicability of using the metal in the cornice brake, and therefore the scope which the metal has as a material for corrosion resisting cornices. Spanning the gap between the two rolls is a sample of the metal turned into standing seam roofing. Underneath is a piece of the metal formed into a ridge roll and alongside of this is an example of flat seam work. At the front of the picture at the right hand is some of the metal riveted with Monel rivets, and the picture also shows a number of corrugated gaskets of the

form in which copper is commonly seen. The background of the picture itself is a large sheet of the metal, which is made as wide as 36 in. and as long as 96 in. In the



Products of Monel Metal Sheets Made by the American Sheet & Tin Plate Company.

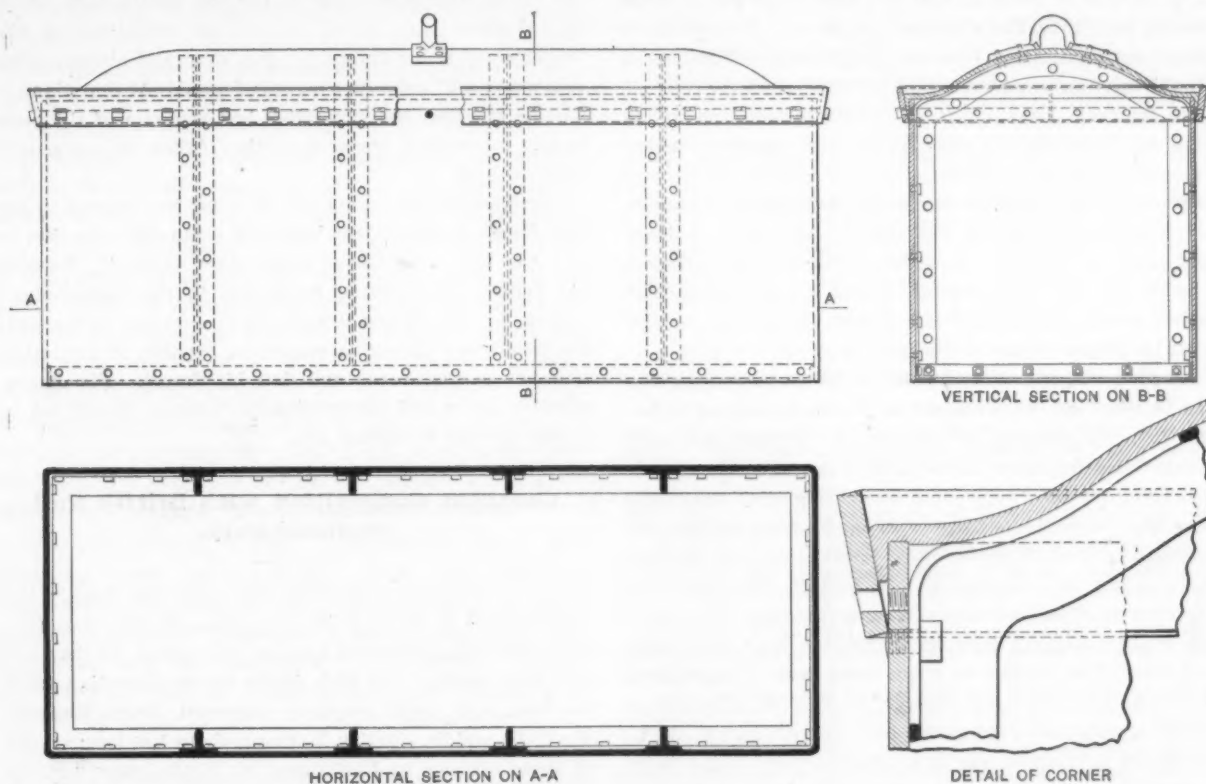
upper center against this background is a view of some soldered seams.

The secret of the properties and possibilities of Monel Metal seems to lie in the content of the ore as it is found in nature, the combination of the elements appearing to give it the resistance to corrosion, a high degree of tensile strength, considerable ductility and flexibility, which means ease of working, and relatively small expansion and contraction changes with changes in temperature. The Monel Metal occurs in the ores, which are

ore means merely the removal of impurities and the reduction of the iron to a percentage not over, say, 1½ per cent. of the entire product, when the result is Monel Metal. The foregoing statements are intended to outline its place as a rolled product in sheet metal form. It also possesses the quality of being readily cast, and in a cast form it possesses a high degree of strength. For example, it is stated that, whereas, American standard steel castings range from 60,000 lb. per square inch tensile strength in soft castings to 85,000 lb. for hard castings, and whereas the Government specifications for manganese bronze castings require 60,000 lb. tensile strength, and in nickel steel castings 85,000 lb., the Monel Metal castings have shown a tensile strength for what are known as grades "B," "C" and "D" of 85,000, 75,000 and 70,000 lb. per square inch, respectively. Its strength when rolled rises to 108,750 lb. tensile strength per square inch. In short, it may be said that *The Iron Age* has seen made of Monel Metal kitchen utensils, chafing dishes, mugs, spoons, and the like; castings of automobile parts, propeller blades and gear wheels; screws, rivets and tacks; soap dishes, sponge receptacles, and other products such as are made with a brass base nickel plated, the Monel Metal when highly finished having the desired nickel polish.

National Welded Annealing Boxes.

The National Mfg. Company, Pittsburgh, Pa., is manufacturing a line of square and oblong shaped welded annealing boxes for use in sheet, tin plate and other lines of work. They are constructed of wrought iron. The sides of the smaller sized boxes are of one piece welded at one corner, while the larger oblong shaped boxes use two pieces of metal to form the sides, which are welded at diagonally opposite corners, as shown in the illustration. By the use of the patent strip (Johnston patent) the life of the box is prolonged from 33 to 75 per cent. One great advantage is that the box can be renewed, which is not true of boxes made of cast steel or steel



Details of a Welded Wrought Iron Annealing Box as Made by the National Mfg. Company, Pittsburgh, Pa.

found in Canada, as a natural alloy of nickel and copper, which requires only the removal of some of its iron to be refined into the commercial product. Whereas nickel itself, as a pure metal, is relatively expensive, owing to the difficulty of isolating it, the treatment of this

plate. Among the plants now using the boxes are the Phillips Tin Plate Company, Clarksburg, W. Va., and the McKeesport Tin Plate Company, McKeesport, Pa. N. D. Yant & Co., Beaver avenue, N. S., Pittsburgh, Pa., are selling agents for the National welded annealing boxes.

THE IRON AGE

Established in 1855.

New York, Thursday, October 15, 1908.

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Employees' Co-operation in Improving Shop Methods.

The last convention of the British Foundrymen's Association produced a paper of a sort usually appealing more directly to machine shop managers and on a subject on which proprietors of some of the so-called modern shops in this country have levied a special claim. "Securing the Co-operation of the Workman in the Improvement of Workshop Methods" is not a theme on which a supposedly labor union ridden country would be expected to furnish the best information. Nevertheless the author, R. W. Kenyon, a portion of whose paper is given elsewhere, demonstrated that in the Ewbank Works at Accrington, England, the attempt to establish a better relation between shop owner and workmen has resulted more successfully than in many shops on this side. This may be due in part to the fact that it is not a large works, and thus the chances are greater for the more direct communication between proprietors and men that would increase confidence and promote good feeling. It is to be noted, however, that the Accrington firm, which was an early experimenter with something akin to the premium system as practiced in the United States, has improved upon the shop suggestion scheme as ordinarily employed in this country, and this departure has no doubt had much to do with the success that has been attained. The further fact that control by a union shop committee is not known at the Ewbank Works should be credited with its proper share of the good results.

A plan which makes it possible for an employee who has in mind an improvement on existing practice to impart it to the directors of the company, without the mediation of his foreman and without any publicity, has advantages over the "suggestion box" scheme, as commonly worked. Why the change was made from having all suggestions passed upon by a joint committee of employees and the management is told in Mr. Kenyon's paper. It will be seen that the main obstacles to the free use of the original plan by employees who had ideas and wanted to realize on them were their coemployees. Foremen, too, were not always friendly to suggestions which experience might prove to have real merit. It is significant that employees with suggestions to make have preferred to take their chances with their employers rather than have their ideas passed upon by foremen or fellow workmen.

In Great Britain, as in the United States, the works making use of the suggestion box are a small minority. And it is noteworthy that the Ewbank Works plan is given publicity at a time when in this country the idea

is passing out of favor. A recent writer gives some reasons for this:

So far from most of the suggestions being good, the fact is that very few of them are good, while many of them are nothing more than ill-considered complaints. Under these circumstances the large majority of them must be rejected, and this soon kills the interest in the plan among the working force. Authors of suggestions always, of course, consider theirs as worth adoption, and when most of them are rejected a comparison of notes among the force soon leads to a discovery of the fact by all, and the natural result of a loss of interest follows. In some cases, indeed, the result has been worse than this, rejections having been charged to ill will on the part of foremen and others and acceptances to favoritism, and so far from inaugurating an era of good feeling, the tendency of the plan has been to inaugurate an era of ill feeling. Some again have had their enthusiasm cooled by the presence in the shop of one or more chronic suggesters, who are always suggesting impracticable things, and following up their suggestions with insistence and importunity in a manner which has led to a little less than disgust on the part of all concerned. On the whole, it is perhaps this suggester of impracticable things who has done more than all others to bring the plan into disrepute.

There are observable cycles in the practical working out of the labor question. Profit sharing and bonus systems were much talked about 20 years ago; but the number of establishments employing either is and has been exceedingly small. Ten years ago collective bargaining, conciliation and conference relations between employees' and employers' organizations appeared to have come into new favor in the metal trades of the country. But what seemed a promising advance toward co-operation has given place to a period in which opposition is the dominant note. Antagonism has been preached by union leaders as the natural attitude of the employee toward his employer, and an answering skepticism of the benefits of any scheme of co-operation is shown by employers who under other conditions might take the initiative in enlarging the workman's opportunity. This situation, as much as any inherent weakness in the shop suggestion plan, is responsible for the failure of the latter to do what was so generally expected of it. Moreover, the disappointing outcome of the one conspicuous effort, in a famous Ohio plant, to win the confidence of the employee by doing things for him over and above paying him wages will not soon pass out of mind. At that plant, it will be recalled, the suggestion box was one of the most widely advertised features of the régime of supposedly good feeling.

Necessarily the trying out of ways and means to the best basis of shop operations will mean the rejection of one and the retention of some other method. Because one scheme of enlisting employees in the improvement of practice has shown drawbacks it does not follow that an intelligent, inventive employee, capable of initiative, will not be discovered and find his desert. The unprogressive union and the unfriendly foreman should not be strong enough to defeat him.

Canadian Competition with British Rail Manufacturers.

For some years after 1883, when the first bounty law was enacted at Ottawa, British iron and steel manufacturers strongly protested against this policy, as they had long done against the high duties in the Canadian tariff on iron and steel products imported from England. Since the middle nineties, however, there has been an end of these protests in Parliament at Westminster, because the British manufacturers realized that protests were futile. They naturally still look with disfavor on the bounty policy of the Canadians. But a stronger word than disfavor will be required to describe their feelings when they realize that the enormous bounties, tax exemptions and other concessions by the Canadian Government to domestic steel plants help these concerns in their com-

petition against British steel companies for rail orders in India.

The tariff reformers in England have long based part of their case for a protective tariff on dumping in Great Britain by American and German manufacturers. The Punjab rail order secured by Sydney, Nova Scotia, opens up a new vista for these followers of Mr. Chamberlain; for a British law that has for its purpose the prevention of dumping by bounty-supported colonial manufacturers would cause no end of friction between the mother country and the colonies and tend more to the disruption of the empire than to the welding of it together by the beneficent bonds of trade on which the English tariff reformers since 1903 have laid such unctuous emphasis. That the Dominion Iron & Steel Company should dump in India, or in any other country, will occasion surprise in the iron and steel trade the world over; for it was on the grievous complaints of the Dominion Company that in 1904 the Parliament at Ottawa passed the first anti-dumping law, in order that the rod mill at Sydney might be adequately protected against dumping from wire-rod mills in the United States. Wire rods were then on the free list in Canada, because at that time a bounty of \$6 a ton on their production was paid. Hence the celerity with which the Canadian Government went to the aid of the Sydney mill when its business was regarded by the Dominion Iron & Steel Company as seriously threatened by American competition.

Our Supreme Court and Compulsory Patent Working.

The United States Supreme Court has just handed down a decision in which for the first time in its history it takes up the question of the right of a patentee to restrain by injunction the infringement of his patent where the defense sets up that the nonuse of the invention constitutes a condition opposed to public policy. The lower courts having jurisdiction in patent matters have passed upon the question from time to time with varying decisions, but the principle had not been established by the final authority. Nor can it be said that the question is fully settled in this latest decision, except that Justice McKenna, speaking for the court, states by inference that a case might arise where, regarding the situation of the parties in view of the public interest, a court of equity would be justified in withholding relief by injunction, leaving to the patentee the redress afforded by action to recover royalties. The decision involves a pithy review of general principles of the American patent laws which is full of suggestion at this time, when their amendment is prominently in the public mind in its bearing upon the principle of the compulsory working of patents and, perhaps, that of compulsory license.

The case in point is that of the Eastern Paper Bag Company versus the Continental Paper Bag Company, and involves the so-called Liddell patent for an improvement on a machine for making a self-opening paper bag, comprising only the mechanism for distending and folding down one end of a paper tube. The question of validity of patent or infringement is unessential in the consideration of the litigation. The real issue was the allegation of the defendant that a court in equity had no jurisdiction to grant an injunction restraining the defendant from employing his machine "even if the said Liddell patent were valid, and even if the defendant's paper bag machine were to be held to infringe that patent, because the said patent is a mere paper proposition which the complainant has never put into effect or use,

and because it is contrary to equity to suppress a useful and established business, like that which the defendant is prosecuting with its paper bag machines, at the request of a complainant which simply owns one paper-bag machine patent that has never been employed by that complainant in any way in any paper-bag machinery, and because the complainant in this case has a plain, adequate and complete remedy at law for any infringement which may have been done."

In other words, the defendant expresses a willingness to pay a proper royalty for the use of the Liddell patent, if it has been infringed, but protests against an injunction restraining it from using the invention at all. The patent was pronounced valid, and that issue was dropped. The Circuit Court, the original jurisdiction, made this comment:

No machine for practical manufacturing purposes was ever constructed under the Liddell patent. The record also shows that the complainant, so to speak, locked up its patent. It has never attempted to make any practical use of it, either itself or through licensees, and, apparently, its proposed policy has been to avoid this. In this respect it has not the common excuse of a lack of means, as it is unquestioned that the complainant is a powerful and wealthy corporation. We have no doubt that the complainant stands in the common class of manufacturers who accumulate patents merely for the purpose of protecting their general industries and shutting out competitors.

The Circuit Court of Appeals, usually the final jurisdiction in patent matters, upheld the complainant's case and issued the desired permanent injunction, all the time granting the facts as set forth by the Circuit Court, but Judge Aldrich dissented, stating his position in brief, as follows:

Simple nonuse is one thing. Standing alone, nonuse is no efficient reason for withholding injunction. There are many reasons for nonuse which, upon explanation, are cogent, but when acquiring, holding and nonuse are only explainable upon the hypothesis of a purpose to abnormally force trade into unnatural channels—a hypothesis involving an attitude which offends public policy, the conscience of equity, and the very spirit and intention of the law upon which the legal right is founded—it is quite another thing. This is an aspect which has not been considered in a case like the one here.

Quoting Judge Aldrich before the Supreme Bench, the defendant's counsel asked:

What was that wrongful purpose? It was the purpose to make more money with the existing old reciprocating Lorenz & Honiss machines and the existing old complicated Stilwell machines than could be made with new Liddell machines, when the cost of building the latter was taken into account. And this purpose was effective to cause the long and invariable nonuse of the Liddell invention, notwithstanding that new Liddell machines might have produced better paper bags than the old Lorenz & Honiss machines or the old Stilwell machines were producing.

Judge McKenna, giving the opinion of the majority of the Supreme Court, upholding the decision of the Court of Appeals in granting the injunction, commenting upon this contention of the defendant, states:

But, granting all this, it is certainly disputable that the nonuse was unreasonable or that the rights of the public were involved. There was no question of a diminished supply or of increase of prices, and can it be said, as a matter of law, that a nonuse was unreasonable which had for its motive the saving of the expense that would have been involved in changing the equipment of a factory from one set of machines to another? And even if the old machines could have been altered, the expense would have been considerable. As to the suggestion that competitors were excluded from the use of the new patent, we answer that such exclusion may be said to have been of the very essence of the right conferred by the patent, as it is the privilege of any owner of property to use or not to use it, without question of motive.

We have seen that it has been the judgment of Congress from the beginning that the sciences and the useful arts could be best advanced by giving an exclusive right to an inventor. The only qualification ever made was against aliens in the act of 1832. That act extended the privilege of the patent law to aliens, but required them "to introduce into public use in the United States the invention or improvement within one year from the issuing thereof," and indulged no intermission of the public use for any period longer than six months. A violation of the law rendered the patent void. The act was repealed in 1836. It is manifest that Congress has not overlooked the subject of the nonuser of patented inventions.

And another fact may be mentioned. In some foreign countries the right granted to an inventor is affected by nonuse.

This policy, we must assume, Congress has not been ignorant of, nor of its effects. It has, nevertheless, selected another policy; it has continued that policy through many years. We must assume that experience has demonstrated its wisdom and beneficial effect upon the arts and sciences. . . . Whether, however, a case cannot arise where, regarding the situation of the parties in view of the public interest, a court of equity might be justified in withholding relief by injunction, we do not decide.

Justice Harlan, dissenting, thinks that the original bill should have been dismissed; that the facts are such that the court should have declined, upon grounds of public policy, to give any relief to the plaintiff by injunction.

Under the new British patent act, as it is now understood in this country, such a case could not arise because no provision is made in the compulsory working clause for revoking a patent where it is permitted to lie idle. Neither could the case be brought under the Canadian act, for if the patent were unused the right to employ it under a license could be obtained by the infringer. With the details of this latest American litigation the workings of the patent systems of the three countries are well exemplified. They provide food for thought as to what is the best practice to embody in the proposed Federal amendments.

Blast Furnace Building in the Lake Erie Region.

The announcement this week that two 400-ton blast furnaces will be built at Buffalo for the production of merchant pig iron calls attention again to the great contribution that district has made to the country's pig iron capacity in the past few years. At the same time, it emphasizes the economic advantage of furnace sites on the shore of Lake Erie. Not to go minutely into statistical comparisons, or to restate the familiar reasons for the lake shore development, it will serve the present purpose simply to point out how much of the blast furnace construction of the few years since 1900 has been carried on in the Lower Lake region.

In 1890 there were but six active coke blast furnaces between Detroit and Buffalo and in those cities. Three furnaces were built in Buffalo in the early sixties, but they were abandoned in the seventies. At Tonawanda a small furnace was built in 1873, but it was cold in the eighties, and was only reconstructed in 1891. Cleveland contributed the pig iron production of all Lake Erie, apart from the small output of charcoal iron at Detroit, there being besides the five furnaces owned or leased by the Cleveland Rolling Mill Company, the Emma furnace of the Union Rolling Mill Company. The capacity of these six furnaces in 1890 was 230,000 gross tons a year.

Ten years later the number of Lake Erie coke furnaces had increased to twelve, one furnace having been abandoned at Cleveland, while three had been built at Buffalo, two at Tonawanda, N. Y., and two at Lorain, Ohio. The capacity was then 1,085,000 gross tons.

Since 1900 the development has been astonishing. At Buffalo, 10 new furnaces have been added, while another is incomplete. One has been built at Erie, Pa., two at Cleveland, two at Lorain, two at Toledo and two at Detroit, including the rehabilitation of an old charcoal stack as a coke furnace. A furnace is under construction at Cleveland and two others are definitely projected of about the same capacity as the two just announced for Buffalo. Thus the furnaces in operation or ready to operate on the shores of Lake Erie now number 31, with an annual capacity of 3,740,000 tons, while two are building, with a combined capacity of 265,000 tons, and four are projected, with an annual capacity of 480,000 tons.

Recapitulating, the number and capacities of Lake

Erie blast furnaces in the three years named were as follows, the figures for 1908 including furnaces building and those for which plans have been made:

Year.	No. furnaces.	Annual capacity. Gross tons.
1890.	6	230,000
1900.	12	1,085,000
1908.	37	4,485,000

Counting only completed furnaces the increase between 1900 and 1908 was 19 furnaces, with a capacity of 3,740,000 tons a year. This represents an increase in capacity of 245 per cent. The best obtainable comparison for the whole country is in the figures given in the Directory of the American Iron and Steel Association, which show that the blast furnace capacity of the United States on November 1, 1901, was 24,800,000 gross tons, and on November 1, 1907, 34,800,000 tons, a gain of 40 per cent. It is significant that the total of 19 furnaces built in the Lake Erie region between 1900 and 1908 compares with a total of 21 built in the same time in the Pittsburgh District and the Shenango Valley in Pennsylvania and the Mahoning Valley in Ohio. Of the total of 37 furnaces built, building or projected on the shores of Lake Erie, 18 are steel works and 19 merchant furnaces, the latter supplying almost exclusively the foundry trade.

Hill Lands Show More Ore Than Estimated.

In speaking for publication on the Great Northern ore lease to the United States Steel Corporation, James J. Hill said last week that up to the end of the present fiscal year of the ore trust, December 7, 1908, the Steel Corporation will have paid in about \$2,000,000 since the lease was made. To be exact, the amount figures out \$1,963,500, counting a minimum of 750,000 tons for 1907 at 85 cents royalty and a minimum of 1,500,000 tons at 88.4 cents royalty for 1908. "But the Steel Corporation," adds Mr. Hill, "has not taken a ton of ore out of the lands leased to it. It has been engaged exclusively in exploration work, drilling and stripping the surface above the ore bodies, and in making arrangements for rapid economical mining. The ore lies as a rule from 60 to more than 100 ft. under the surface. In this exploration work it has expended approximately \$4,000,000, so that by the end of the year the company will have paid about \$6,000,000 without extracting a ton of ore. The exploration work showed the mines to contain a much greater amount of ore than was estimated at the time of the contract. The estimates then ranged between 500,000,000 and 750,000,000 tons."

McClure Hot Blast Stove Contracts.—G. W. McClure, Son & Co., Bessemer Building, Pittsburgh, have received a contract from the Colonial Iron Company, New York, for the erection of three 18 x 75 ft. stoves and all of the necessary piping, at the company's furnaces at Riddlesburg, Pa. Work was commenced last week on the contract. The firm has also received an order from the Worth Brothers Company for the erection of three stoves 22 x 90 ft., to be built at Coatesville, Pa. The same firm has practically completed 16 of the 32 hot blast stoves contracted for by the Indiana Steel Company, Gary, Ind., and is rapidly completing the work on a contract for seven stoves being erected for the Tennessee Coal, Iron & Railroad Company, Ensley, Ala.

The Standard Steel Car Company, Pittsburgh, will build all of the 1000 steel cars for the Chicago & Alton Railroad at its Hammond, Ind., works. The plates and shapes for these cars will come from the Illinois Steel Company.

Hyde Brothers & Co., having offices in Pittsburgh and New York, have recently been appointed representatives in these districts by the Standard Boiler & Plate Iron Company, Niles, Ohio, for its line of boilers, tanks, blast furnace and steel plate construction, &c.

The Canadian Railroads' Limited Buying.

TORONTO, October 9, 1908.—For about a year the gross earnings of Canadian railroads have been on the decline. This change is particularly marked in the case of the Grand Trunk Railway Company, whose annual meeting was held in London, England, a few days ago. Present conditions give every indication—it is scarcely too much to say they give every assurance—that the turn for the better has come, and that the railroads will be fairly busy from this time forward. When the traffic returns get back to their former high showing the work of railroad building and betterment will be carried on on its former large scale. To solve the problem of keeping up net earnings in the face of falling gross earnings, railroad companies have had to skimp their maintenance expenditures. The upkeep of roads formerly afforded liberal business to manufacturers of rails, bridge material, locomotives, cars and other equipment, for it had become the rule to charge more of this account to income than was the case a decade ago. If revenue yielded less for the maintaining or rather improving of the system, capital could be drawn upon. In this country the difficulty of selling new issues of stocks or bonds never became so great as it was for a time within the last twelvemonth in the United States. Still, even capital outlay has been very sparing since the beginning of the trade reaction, notwithstanding that both the Canadian Pacific and the Grand Trunk companies were able to sell their issues. This restricted spending on the systems may be put down to a waiting policy, the railroad companies evidently believing that the prices of material and labor would decline below the minimum points reached in the dull period. Now that the signs point to a continued upward movement in trade, the companies are buying less reservedly. The rail mill at Sault Ste. Marie started up with good business in hand and with enough to keep operating upon for some time. It was not alone the apparent certainty of prices going up rather than down that impelled the railroad companies to place orders for material and equipment. They had a big grain traffic to handle, and it became necessary to put their systems in a state of efficiency in the heavy traffic sections.

Railroad companies are not so indifferent to the rail duty as they were a while ago, when their business was so flourishing. As the three leading systems have each a great mileage, and as each has big programmes of new construction to carry out, the \$7 a ton is felt as a burdensome charge just now. So far the rail making companies of Canada have been able to keep to themselves the greater part of the benefit of this duty, though there have been some considerable rail importations within the last 18 months. If, however, the Canadian demand for rails becomes dull the home mills may close down, as the Sault mill did, or may look to the outside market, as the Sydney mill is reported to have done in one case. If rails were among the articles for whose manufacture a bounty is provided, the selling of them abroad might be unremunerative, for it is a condition of the bounty act that on none of the specified articles shall the bounty be paid when they are exported. If they are exported after the bounty has been paid the money must be returned to the Government. It is true the domestic pig iron and the steel ingots entering into Canadian rails are materials on which bounty has been paid, but as none has been paid on rails themselves their exportation calls for no refunds to the treasury. Steel blooms and steel billets are, however, not exportable without permission from the Government or without return of the bounty paid on the ingots from which they are made.

Since the annual meeting of the Grand Trunk Railway Company in London a few days ago there have been rumors that the Grand Trunk Pacific Railway Company will ask to be relieved of its agreement to lease and operate the Eastern Division of the National Transcontinental Railway, which division is to extend from Moncton in New Brunswick to Winnipeg in Manitoba. It is known that there is dissatisfaction among British shareholders of the parent and proprietary company, the Grand Trunk Railway. Some of these are demanding that a Canadian board be constituted to keep close supervision of the man-

agement. Especially there is a desire to have the shareholders more in touch with what is going on in respect to the Grand Trunk Pacific Railway. As the company has to pay a rental of 3 per cent. on the cost for the operating of the Eastern Division, the company's desire to keep down the cost is entirely natural. There is no doubt that under Government management the cost of construction is much greater than it would be under capable private enterprise. Charges of overclassification were made in the last session of Parliament, both by a Government engineer and by a Grand Trunk engineer. There are both room and temptation for tremendous waste, and when the division is finished a great part of it will have little or no traffic originating value.

C. A. C. J.

Seattle Trade Notes.

SEATTLE, Wash., October 3, 1908.—Within a short time many more men will be at work in the metal trades in Seattle and other Puget Sound cities than at present. One employer, who is working but half force at present, announced a few days ago that it would soon be necessary for him to increase his crew. In fact, there is a general air of activity in the trade. The lumber interests, practically paralyzed for many months because of the freight rate controversy with the railroads and the lack of demand from the interior and Eastern States, are rapidly recovering. Iron working establishments, dependent largely on the lumber industry, are stimulated, together with every other line of business in the Pacific Northwest.

A close observer of transportation affairs a few days ago predicted a severe car famine in this vicinity by November. The resumption on a large scale of lumber and shingle shipments, and the replenishing of merchandise and other stocks allowed to run down during the depression, will have a tendency to tax the transcontinental lines to their utmost. The approach of the Chicago, Milwaukee & St. Paul Railroad on this account, is watched with increased interest. Only a few days ago the rails were laid to the summit of the Cascade Mountains, from the east side. It had been planned to reach this point before the first fall of snow; although the snow arrived before the steel reached the summit, the track was laid in time to avoid the severe winter season. The completion of this railroad, which will be accomplished without any doubt by the middle of next summer, will prove a great factor in solving the transportation problem of the Pacific Northwest. A few days ago President Earling, with William Rockefeller and other directors of the road, visited the city. Mr. Earling told of the White Special, which it is proposed to run from Seattle to Chicago, with one or two sleepers running through to New York. The equipment will be exclusively for transcontinental travel. No local day travel will be carried. Several trains for this run are now under construction.

The members of the recent Chamber of Commerce excursion from this city were practically unanimous in pronouncing the roadbed of the new Seattle, Portland & Spokane Railroad up the north bank of the Columbia River from Vancouver, Wash., to Pasco, the best in the entire 1100 miles of the trip.

A meeting of the Oregon District of the United Metal Trades Association has been called at Portland for October 22, when it is proposed to initiate the formation of a foremen's organization similar to the Milwaukee Foundry Foremen's Association. The foremen of all the plants in the Oregon District will be invited to attend. The employers, of course, do not expect to have anything to do with the organization, more than to get it under way for the educational value it will have and the mutual advantage to all concerned. Similar movements will be inaugurated in the Washington and the British Columbia districts, although no date has yet been set for meetings.

Building activity in Seattle continues without abatement. Notwithstanding the slump in January, February and March of this year, the permits up to the present time average more than \$1,000,000 a month for the year 1908. October promises to be especially heavy. In all probability work will commence on the second of the Metropolitan Building Company's series of steel structures. The first, the White Building, 11 stories high, has

the outer masonry work nearly completed. The Metropolitan Building, equal in size, will adjoin. Armour & Co. some time ago announced the intention of putting up a building costing several hundred thousand dollars on a site one block from the King Street Passenger Station. The permit may be taken out in October for this structure, as well as for a number of others in the business district. The value of permits issued in September by the superintendent of buildings was \$1,104,631. The larger number of these was for residences, requiring comparatively little structural steel.

The advantage of building with prices at the present figure on structural materials is being urged in the city, and many large property holders are figuring on putting up buildings now which they would otherwise have delayed for a year or so. The architect in charge of the erection of the new 8-story Archbald Hotel announces that the building is going forward on a basis of \$125,000, whereas a year ago it would have cost \$160,000. Steel is going up and it will be completed by the beginning of the year.

The Seattle bank clearings for the month of September were \$40,240,530, the heaviest since October, 1907, which was the banner month in the history of the city.

W. T. P.

The Dominion Steel Company Exporting Rails.

MONTREAL, October 9, 1908.—The price at which the Dominion Iron & Steel Company has secured the order for 9000 tons of rails for the Southern Punjab Railway, apparently in competition with British steel making companies, is certain to be a matter of much discussion in England. This is the first oversea export order that has been secured by the Dominion Company since its rail mill was installed in 1905, it having had one order for the Elevated Railway Company at Boston. It is doubtful whether on the pig iron and steel ingots which go into this Punjab order the company will draw from the Dominion Treasury the bounties of \$1.10 a ton on pig iron and of \$1.65 a ton on steel ingots, which are payable under the Bounty act of 1906, when this material goes into rails for service in Canada.

In the early days of the Sydney plant, before the rail and the rod mills were in operation, the company exported pig iron and steel ingots to England; and on these products drew bounties in accordance with the terms of the Bounty acts of 1899 and 1903. But two years ago, when the Tariff Commission and the House of Commons at Ottawa were engaged in the general revision of the tariff of 1897, there were rumors that the United States Steel Corporation intended to establish an iron and steel making plant in the neighborhood of the Detroit River, Ontario. Mr. Fielding, the Minister of Finance, in his exposition of the financial resolutions on which the Bounty act of 1906 is based, stated that while Canada would welcome the establishment of a plant by the Steel Corporation it was not willing that the latter should draw on the Dominion Bounty Fund in respect of iron and steel exported from Canada.

In the numerous bounty laws enacted from 1883 onward at Ottawa, there were no provisions withholding bounties from the export business. As a matter of fact, while in the period between 1854 and 1883 a fair quantity of pig iron had been exported from Canadian furnaces, there was no export trade amounting to anything from 1883 to 1901, when the Dominion Iron & Steel Company began to market part of the output of its furnaces in England and Scotland. But the likelihood of the Steel Corporation going into the iron and steel manufacturing business in Ontario put the Dominion Government on its guard; and in the bounty law as it now stands there is a provision intended to apply to the export trade.

The law sets out that bounties may be paid out of the consolidated revenue fund on a definite list of products "manufactured in Canada for consumption therein." Whether or not the Dominion Company can successfully claim bounties on the raw material that has gone into its first oversea export order will depend on what construction the Department of Trade and Commerce at Ottawa, which

certifies for the payment of bounties, puts on the words "manufactured in Canada for consumption therein." It is on pig iron and ingots, not on rails, that bounties are paid; and it will not be very difficult for the Steel Company to claim that the pig metal and open hearth product that has gone into the Punjab rails were manufactured in Canada "for consumption therein." Pig metal made in Canada is sold to agricultural implement manufacturers. Agricultural implements nowadays figure quite largely in the export returns of the Department of Trade and Commerce; but there is no record that has been made public in Canadian newspapers that the bounty on pig iron was ever withheld when the metal went into agricultural implements that were shipped abroad. As the law stands, the Indian order raises a nice question for the Department of Trade and Commerce, with the odds rather in favor of the Dominion Company establishing its claim.

Over in England the Indian order for Sydney is likely to raise another issue, and an issue which will dislocate the cherished theories of those followers of Mr. Chamberlain who insist that if England will only set up protective duties against imports from the United States, Germany and other non-British countries, with preferences for Canadian and other Colonial products, the Dominion manufacturers will submit to much lower duties on imports from Great Britain. The tariff preferences on pig iron and steel rails in Canada, as they have existed since 1897, have been practically worthless to the British iron and steel industry because of the large bounties which Canada bestows on these industries in the Dominion, and also because under a Dominion law Canadian railroad companies receiving subsidies for new roads may be compelled to lay these new roads with rails made in Canada.

E. P.

A Late Strike Injunction in Federal Courts.

At Seattle, Wash., an injunction has just been granted in the United States Circuit Court against the Pacific Coast Federation of 'Longshoremen, the Puget Sound Council, Pacific 'Longshoremen, and various officers and members who are named, who have been carrying on a strike for several months against the Alaska Steamship Company and the Alaska Pacific Steamship Company. The case is of interest in view of the political prominence the injunction issue has received. On July 25 an application for a preliminary writ of injunction was filed and the case was set for hearing on August 3. A postponement was made to a later date, but the defendants did not appear. The court has now issued a restraining order to prevent them from in any manner interfering with, hindering, obstructing or stopping the business of the steamship company; from compelling or inducing or attempting to compel by threats, intimidation or violence any employees of the two companies to leave their service; from attempting to prevent by threats or violence any persons from entering the service of the companies; from congregating upon or about the premises of the steamship companies or the streets adjacent for the purpose of intimidating employees, or hindering them in their duties; from maintaining at or near the premises any pickets in a threatening or intimidating manner and from interfering with the employees of the two companies in going to or from their work.

The attorney for the defendants offered affidavits to show that an orderly strike was being conducted, and that the strikers had not counseled or countenanced violence, but the court considered that the specific charges of violence and threats, of tearing down the posted orders of the court and of attacks on nonunion men were sufficiently proved to justify the granting of an order for an injunction. Judge Hanford said that plainly the strikers had violated Section 4 of the Sherman Anti-Trust law by the commission of acts of violence, making threats and doing the things which in the contemplation of the law constitute restraint of trade and an interference with commerce. The court added: "There is cause for invoking the power of the court in this case because violence has been threatened, because violence has been committed and business has been interfered with."

Customs Decisions.

Copper Alloy Bars.

In sustaining a protest filed by the Driver-Harris Wire Company, Newark, N. J., the Board of United States General Appraisers holds that hot-rolled rods or bars composed of an alloy of copper and phosphor tin, copper representing 94 per cent. of the composition, and used solely as raw material for making wire, is free of duty under the tariff provision for "composition metal of which copper is a component material of chief value not specially provided for." The customs authorities decided that the merchandise was subject to duty as "copper rods," with a duty of 2½ cents per pound, whereas the importers alleged exemption of duty as indicated above. In addition to the claim for free entry, the importing company set up the further contention that, if the goods are not entitled to entry under the free list, they are dutiable either at 10 or 20 per cent., as unenumerated manufactured or unmanufactured articles. In his decision for the Board, however, General Appraiser Fischer confines his conclusions to the claim for free entry. He says:

The rods or bars here in question are not available for any practical purpose until they are subjected to further manipulation and manufacture. In its imported condition the article is the raw material for the wire drawer. It must be considered as an ordinary or commercial form of alloy metal. Following the principle as announced in decision of the court as to nickel alloy in the form of rods, Boker versus the United States, these articles are in no sense to be regarded as manufactured articles. It then remains to determine what provision in the act covers or includes this article as a metal.

It is stated by Mr. Fischer that while there has been some trade testimony offered in this case to demonstrate what in fact constitutes the composition metal of commerce, the evidence submitted is wholly unsatisfactory. In conclusion, the decision says:

It appears to us that the provision in the tariff for all composition metal did not contemplate one kind of composition metal or copper alloy, but that by the further words, "of which copper is a component material of chief value," Congress did provide for an alloy metal of the kind here in question, composed of 94 per cent. of copper and 5 per cent. of tin. We hold the merchandise to be free of duty under paragraph 533 of the tariff as a composition metal not specially provided for, and we sustain that claim in the protest.

Gun Locks.

The Board has affirmed the legality of the action of the collector of customs at Chicago in assessing additional duties on extra detachable locks accompanying importations of double-barreled breech-loading shotguns by Von Lengerke & Antoine, Chicago. The guns were assessed at \$6 each, and in addition thereto 35 per cent. under paragraph 158 of the tariff act, and the additional parts at 50 per cent., under the same paragraph, as "parts of such guns." The importers contended that the extra parts are interchangeable parts, and should have been classified with the gun as a unit or entirety. In reaching the conclusion that the extra parts are dutiable, General Appraiser Fischer has this to say:

It is admitted that the extra detachable locks have been fitted and adjusted carefully to the particular gun which they accompany, and can only be used with that gun. That, however, will not prevent a separate classification of such extra parts. The breechloading guns as imported were complete and ready for use, and each had attached thereto a pair of detachable locks. In use but one pair of locks can be used on a gun at a time, and it follows that the extra or additional ones are in no sense to be regarded as an indispensable part of the entirety.

The Crane Iron Company, Catasauqua, Pa., which has had a corporate existence under various names since 1839, has been granted a perpetual charter by Governor Stuart of Pennsylvania under the name of the Crane Iron Works, having a capital stock of \$750,000, of which \$502,133.33 is paid in. The rechartering of this famous company, now controlled by the Empire Steel & Iron Company, which holds 10,034 of the 15,000 shares of stock, is an interesting story. It was originally chartered in June, 1839, under the name of the Lehigh Crane Iron Company. On April 11, 1861, it was chartered for a period of 25 years from 1864, and then the name was changed to the Crane Iron Company. On July 12, 1885, it was again chartered, this time under the act of 1874,

to exist for 20 years from 1889. The incorporators of the company are all men identified with the Empire Company, including Leonard Peckitt, president; J. W. Fuller, Sr., Archer H. Brown, J. S. Stillman, A. A. Fowler, E. R. Chapin, C. H. Zehnder and H. S. Hart.

Philadelphia's Rapid Transit.

In a sumptuous volume in undressed leather, the Millard Construction Company presents an account of the construction and equipment of the Market Street Subway-Elevated portion of the Philadelphia Rapid Transit Company's system. The story of the latest development in rapid travel through the streets of Philadelphia is told most interestingly, beginning with the granting of franchises for several routes of rapid transit lines by the councils of the city of Philadelphia in 1901. The Market street Subway-Elevated consists of 7.41 miles of structure and 17.20 miles of single track. It extends from a terminal at Sixty-ninth street west of the city boundary on an east and west line to the ferries on the Delaware River. The original franchise providing for an elevated road the length of Market street, was amended so as to permit the building of the subway between the Schuylkill and Delaware rivers, this portion of the line being something over two miles in length. The running time from Sixty-ninth street to Second street is 27 minutes eastward. Between the City Hall and Second street the running time is seven minutes, or less than half the best time possible on the surface line. The East Market street section of the subway is 5888 ft. long. Its general width out to out of walls is 37 ft. and the clear head room is 14 ft. The distance center to center of tracks is 13 ft. 3 in. It is a rectangular tunnel of reinforced concrete. All of the structural steel used is covered with concrete, the only iron visible being at the stations. The engineering problems involved in this eastern section, as the volume before us points out, were unique. It underlies a mile or more of the busiest street in Philadelphia. The route is lined on both sides with large buildings, many of them converted and added to from time to time on old foundations. Further, the street was riddled with a century's accumulation of gas and water pipes, sewers, electric wire conduits and fire mains, in places too close together to admit a hand between them. The problem before the Millard Company's engineers, the working out of which was a conspicuous triumph, was that of building a double track subway and reconstructing the sewer system, building an adequate concrete sewer each side behind the walls of the train tube, and also rebuilding and arranging the telephone, telegraph, electric power and light, gas, water and high pressure fire systems without interrupting the service in any of them. The methods followed in solving these problems are given in detail, and the letter press is made luminous by illustrations of various portions of the subway and of the connected power house and equipment. Full page portraits are also given of the officers of the Philadelphia Rapid Transit Company, and the officers and engineers of the construction company.

The separate bridge over the Schuylkill River, which the subway-elevated made necessary, was the 20th bridge constructed over that river within the city limits, 10 being for streets and 10 for railroads. It is 576 ft. long and carries four tracks, two for the elevated railroad trains, which pass to the subway east of the river, and two for the street railroad cars, which converge from the surface lines in West Philadelphia into the subway. A third rail supplies power for the elevated and subway trains; the cars entering the subway from the surface lines are operated by overhead trolley.

The new line was thrown open to public travel from Sixty-ninth street to the Second street station on August 3, 1908, though the western portion had been in use for some months. Philadelphia was the last of the large cities to get elevated and subway transportation, but the first in which the subways were built by private capital. The volume commemorating this great enterprise says that it was carried through under difficulties never before encountered in similar work, and that whether it will pay directly is a question yet to be determined.

A Pittsburgh Bar Iron Reminiscence.

The recent sesquicentennial celebration of Pittsburgh brought out much of antiquarian interest in connection with the manufacturing establishments of that city. One of the important iron enterprises there which flourished for many years, and now forms part of the American Steel & Wire Company, was the business founded in 1824 by Dr. Peter Shoenberger, who died about 1856. He and his associates operated what was at first known as the Juniata Iron Mill, and a blast furnace subsequently connected with it was operated by a separate firm under the style of Shoenberger, Blair & Co. Both branches were eventually united under the name of the Shoenberger Steel Company. For many years Gen. C. L. Fitzhugh was president of the company, in which he and John Z. Speer and G. A. Steiner were the active partners, and these were the men who were directing the business when the Shoenberger interests were taken over in 1899 by the American Steel & Wire Company. In looking over the early records of the company, William L. Hirsch, the local sales agent of the Steel & Wire Company, found a price-list issued in the early 30's which has a peculiar interest at present in view of the great difference in the price of bar iron and hoop iron as compared with prices ruling at the present time. The old price-list is as follows:

JUNIATA IRON WORKS.

The subscribers, owners of the above establishment, manufacture and have constantly on hand the following articles, all of which they warrant to be made from the best Juniata blooms:

Bar Iron.

From 5 in. to 1½ broad, by ¾ thick.....	\$100
Dandy Tire, 1½, 1¼ and 1 in. broad, by ¾.....	125
Saddle tree, 1¼, 1½ and 1 in. by ¾, 3-16 and ½.....	120
¾ in. by ¾, 3-16 and ½.....	125
¾ in. by ¾, 2-16 and ½.....	140
¾ in. by ¾, 3-16 and ½.....	150

Square Iron.

From 2½ in. to 1 in. broad.....	100
¾ in. wide.....	110
¾ in. wide.....	115
¾ in. wide.....	120
¾ in. wide.....	125
¾ in. wide.....	140
5-16 in. wide.....	150
¾ in. wide.....	155

Round Iron.

From 2½ in. to 1 in. thick.....	100
¾ in. thick.....	110
¾ in. thick.....	115
¾ in. thick.....	120
¾ in. thick.....	125
¾ in. thick.....	140
5-16 in. thick.....	152
¾ in. thick.....	158

Hoop Iron.

6d, 3d, 10d, 12d, 16d and 20d.....	115
5d.....	120
4d.....	125
3d.....	135
1 in. broad.....	140
¾ in. broad.....	145
¾ in. broad.....	150
¾ in. broad.....	158

P. SHOENBERGER & SON,

Warehouse in the City, Wood st., No. —.
Pittsburgh, 1830.

The *American Wire Rope News* for September, published by the American Steel & Wire Company, gives several interesting articles by engineers on the uses to which wire rope is placed. One of these articles describes an elevator hoist in the store of Marshall Field & Co., Chicago; another treats of logging with wire rope on the Pacific Coast; the third is on the subject of draining and reclaiming swamp lands in Arkansas and Louisiana; the fourth describes the wire rope used on the Arctic steamship *Roosevelt*.

The American Blower Company, Detroit, Mich., announces that it has a limited supply of leather covered vest pocket sized copies of the *Manual for Engineers* compiled by Prof. Charles E. Ferris of the University of Tennessee, which will be supplied free as long as they last to any engineer or contractor who applies for one.

Iron Slag Blocks in the United States.

The use of iron slag blocks for street paving has received some attention in engineering circles recently because of the legal contest over the receipt of bids by the Borough of Brooklyn for the paving of several streets with such blocks. The charge was made by interests representing other kinds of paving that the iron slag blocks could be secured through but one channel, and that therefore no real competition for the paving contract was possible. An investigation of the manufacture and use of iron slag blocks has been made by the *Engineering News*, which gives the experience of engineering departments of several cities.

Blast furnace slag is used in the manufacture of this class of paving, the molten slag being poured into block molds. Such use of slag from blast furnaces originated in England, and the product was introduced into the United States 15 or 20 years ago, in most cases the blocks being imported. At that time a blast furnace in Pennsylvania undertook their manufacture, but this continued for only a short time. Another furnace company in this country which was approached by an engineer some time ago concerning the manufacture of iron slag blocks replied that it had investigated the matter, but found its slag too silicious and too low in alumina for the manufacture of paving like that which had been imported. The slags produced abroad showed just the contrary in these two respects. It was added that in the annealing to which the blocks are subjected the slags made from Lake Superior ores contain no elements assisting the hardening process, while ores used in Europe produce slags showing great strength and density after annealing. A representative of a firm which manufactures these blocks in the Newcastle district in England investigated the slags made at the American furnace plant in question, and took a number of samples back to England, but nothing came of the proposal to establish a plant in this country.

Experience with Slag Blocks for Paving.

The reports from various cities which have used iron slag blocks are not uniform. In the Borough of Brooklyn, New York, the blocks laid between street railroad tracks have flaked badly on the surface, though otherwise showing good wearing properties. In the Borough of the Bronx it has been found that the pavement is very slippery, and chips to an irregular surface so that teams generally avoid it if possible. At Baltimore, Md., the street railroad company reported on the use of these blocks in the paving between rails, and for 2 ft. outside of the track which the company is required by law to lay. They were found to stand up well under heavy traffic, and were used principally on streets formerly paved with sheet asphalt. The use of the blocks as new paving in a street is not recommended, because of their being extremely noisy under heavy traffic, and because the horses do not maintain their position in inclement weather as well as on Belgian blocks. Philadelphia laid nine miles of iron slag paving 10 years ago, but on account of the extensive chipping of the edges and the unsightly appearance of the heavily traveled streets, the material fell into disfavor. Toronto engineers do not recommend the iron slag blocks, their experience being that the surface is too slippery. In Montreal they have been in use for 16 years, and are reported hard, durable, with an even top and giving full satisfaction.

One of the chief objections urged against iron slag blocks is that they are now made only in England, and that there is apparently an understanding among the manufacturers, who have but a single selling agency in the United States. The cost, as reported from various cities, ranges from \$50 to \$55 a thousand, while in England the blocks are selling at \$12 a thousand, and can be bought in Canada for \$34 a thousand. While the experience above summarized is on the whole not favorable, it would yet seem that the subject is worthy of investigation by American blast furnace companies, inasmuch as the one important outlet for blast furnace slag at present is in the form of slag cement.

PERSONAL.

H. S. Braman has been appointed superintendent of blast furnaces of the Youngstown Sheet & Tube Company, Youngstown, Ohio.

Robert A. McKean of Coffin & McKean, constructing engineers, Fulton Building, Pittsburgh, has returned from Europe.

Edgar M. Moore, Farmers' Bank Building, Pittsburgh, has returned from Europe.

Dr. P. Héroult, the inventor of the electric steel processes which bear his name, has just arrived from France for a stay of a few months.

Howard P. Eells, president of the Bucyrus Company, South Milwaukee, Wis., sailed October 1 for a trip to various European points.

William O. Vilter, secretary and treasurer of the Vilter Mfg. Company, Milwaukee, Wis., arrived home October 1, after an extended European trip, having been abroad since last March.

Robert J. Gross, Dunkirk, N. Y., has resigned as vice-president of the American Locomotive Company, an office which he has held since the organization of the company in 1901.

Charles Churchill of Charles Churchill & Co., Ltd., London, England, is to visit in this country a number of the machinery and tool manufacturers for which his company is English selling agent. He plans to be in New York during the annual meeting of the Machine Tool Builders' Association, October 20.

Edwin E. Bartlett, president of the Boston branch, National Metal Trades Association, has sailed for Europe, planning to be absent six weeks.

G. M. Laughlin, Jr., general superintendent of Soho mills, and E. L. Messler, general superintendent of Pittsburgh coke ovens and blast furnaces of the Jones & Laughlin Steel Company, who have been hunting in New Brunswick, are expected home this week.

F. H. Buhl of Sharon, Pa., is extending his Twin Falls canal in Idaho to reclaim 700,000 acres of arid land. Water will be drawn from the Snake River. The project includes a system to carry the water supply across Salmon River Canyon, which is about 1650 ft. wide, and whose bed is 500 ft. below the level of the proposed canal.

John B. Howat has resigned as vice-president and general manager of the Dillon-Griswold Wire Company, Sterling, Ill., and will become head of the newly incorporated Sharon Hardware Mfg. Company, Sharon, Pa.

The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club October 7. In the absence of the president, Josiah Thompson occupied the chair. The business transacted was largely of a routine nature. Resolutions of sympathy and regret concerning the recent death of Walter E. Devlin, president of the Philadelphia Hardware & Malleable Iron Company, a member of the association, were adopted. Mr. Devlin, who was a son of Thomas Devlin, president of the Foundrymen's Association, was well known in the trade, particularly in the hardware branch.

The paper for the evening's discussion was on "Systematic Inspection and Analysis of Fuels," by W. S. Gould, president of the Fuel Engineering Company, New York. An abstract of the paper is printed in another portion of this issue. A short discussion followed the reading of the paper, after which the meeting adjourned.

The third convention of the Lakes to the Gulf Deep Waterway Association was held at the Auditorium Theatre, Chicago, October 7, 8 and 9, and was attended by over 4000 delegates representing the commercial and industrial interests of the Mississippi Valley. A notable feature of the occasion was the presence of the two leading Presidential candidates, William H. Taft and William

J. Bryan, who in addresses delivered before the convention on Wednesday strongly indorsed the deep waterways project embodied in the plans of the association. Included in the list of speakers who addressed the convention were James J. Hill, Theodore P. Shonts, David R. Francis and John Temple Graves. The State of Illinois will submit to the voters at the coming November election the question of a constitutional amendment to provide a bond issue of \$20,000,000, of which \$17,000,000 is to be spent in the building of the deep waterway to the Gulf. The remaining \$3,000,000 is to be used in developing electric power from the water of the Desplaines River, from the sale of which the whole \$20,000,000 is to be paid back to the State. Resolutions adopted by the convention strongly indorsed this proposed bond issue and demanded that a definite and vigorous policy of waterways improvement, beginning with the Lakes-to-the-Gulf deep waterway, be promptly adopted and put into operation by the National Government.

OBITUARY.

JOHN W. MUTE of St. Louis, Mo., president of the St. Louis Car Wheel Company, died at his summer home in Portland, Maine, October 5, aged 47 years.

ROBERT DEELEY, founder of the firm of Robert Deeley & Co., manufacturers of machinery at 541 West Thirty-second street, New York City, died October 5, aged 81 years. He was born in England and came to this country 53 years ago. He organized the firm which bore his name in 1868, and retired about four years ago, leaving the business in control of his son, Thomas E. Deeley.

GEORGE F. WILSON, treasurer of the Globe Wire Company, Harrison, N. J., died October 4, aged 52 years.

GEORGE WILSON, secretary of the New York Chamber of Commerce for the last 40 years, died October 8, aged 72 years. He was born in New York and was educated in the local public schools. He entered the Chamber of Commerce in 1856 as assistant secretary. In 1861, after Fort Sumter had been fired on, Mr. Wilson resigned and entered the navy as paymaster on the Valley Forge. At the close of the war he resumed his old position, and when John Austen Stevens resigned in 1868 he was unanimously elected secretary. On all subjects connected with the commercial and financial history of New York City he was a mine of information. In the prosperity and dignity of the Chamber of Commerce his ambition was centered. He was a member of the New England Society in New York, the New York Commandery of the Loyal Legion, the Naval Order of the United States, the Metropolitan Museum of Art, American Museum of Natural History, and the New York and Long Island historical societies.

THEODORE S. BASSETT, president of the United States Rubber Reclaiming Works, New York City, and vice-president of the Iron Foundry Company, Derby, Conn., died suddenly at his country home at Fort Trumbull Beach, Milford, Conn., October 7, aged 69 years. He was born at Derby, Conn., and was once postmaster of Derby, having been appointed by President Cleveland.

JOSEPH PAINTER, Sr., head of the firm of Joseph Painter & Sons of Lebanon, Pa., operating an iron foundry at Myerstown, Pa., died October 9, aged 86 years.

HENRY W. CORTES, president of the Bering-Cortes Hardware Company, Houston, Texas, was killed in a runaway accident October 4. He was born in Galveston 52 years ago, and in 1885 removed to Houston, where he became a member of the firm of Bering & Cortes, which continued until 1901, when the business was incorporated under the present style.

An actual shortage of 1579 cars on September 30 is reported by Canadian railroads, due to the large movement of grain in Western Canada. For the United States and Canada, the American Railway Association's reports show on that date a surplus of 125,678 cars, the smallest of the year, and less than one-third the maximum figure, 413,438, on April 29. The reduction in the last two weeks of September was 44,974 cars, of which 21,000 are box cars and 17,000 coal cars.

NEWS OF THE WORKS.

Iron and Steel.

The Rockdale Iron Company's furnace at Rockdale, Tenn., is now making foundry iron. In July and August and for a few days in September it was burdened for ferrophosphorus.

The Temple Iron Company's furnace at Reading, Pa., is again in blast after being out for more than nine months.

At the Nittany Iron Company's furnace, Bellefonte, Pa., additional boiler capacity is being installed and general repairs made. The furnace has been out of blast since the middle of April.

The Upson Nut Company's furnace, at Cleveland, Ohio, is out for relining. It was last relined in the early months of 1906, being then known as River Furnace.

The drought is responsible for the closing down of one blast furnace, that of the Bessie Ferro-Silicon Company, at New Straitsville, in the Hocking Valley, Ohio.

The Meehan Boiler & Construction Company, Leetonia, Ohio, builder of tanks, blast furnaces, steel pipe and plate construction, is building a Mullen gas washer to be used in connection with the blast furnaces of the Salem Iron Company at Leetonia. The company has recently completed work on new dust catchers, downcomers and piping for Nos. 1 and 2 furnaces of the Columbus Iron & Steel Company, Columbus, Ohio, and is building a complete new furnace shell with dust catchers, downcomers and piping for the Wellston Steel & Iron Company, Wellston, Ohio.

Repairs are being rushed on the rolling mill of the Western Steel Car & Foundry Company, at Anniston, Ala., and operations will probably be resumed during the coming week.

Announcement is made that the Bessemer rolling mill of the Tennessee Coal, Iron & Railroad Company, at Bessemer, Ala., will be put in operation during the coming week, employing a double shift of men.

General Machinery.

The Termaat & Monahan Company, Oshkosh, Wis., manufacturer of gasoline engines, has purchased property adjoining its plant for the erection of a new building. The company will make a specialty of marine gas engines.

The Pennsylvania Forge Company, Philadelphia, Pa., which recently awarded contract to the Belmont Iron Works for the construction of its new shop, is not yet ready to purchase additional machine tools. The new building will be of steel construction throughout, and will have a greater capacity in both the forge and machine departments.

The Thomas Carlin's Sons Company, 1600 River avenue, N. S., Pittsburgh, builder of shears, grinding pans, contractors' equipment, &c., notices considerable improvement in its line and reports inquiries more numerous than for some time past. Recent orders taken and on which deliveries are being made include the following: One No. 5 shear to cut 3½ in. sq., two No. 40 to cut 1¼ in., and one No. 18 to cut 2¼ in., all belted, for shipment to Birmingham, Ala.; one No. 1 belted shear to cut 6 in. sq., for Toledo; one 7 ft. wet pan for a steel foundry in St. Louis; two No. 18 belted shears to cut 2¼ in., for Elizabeth; one No. 44 to cut 1 in. and one No. 28 to cut 1¼ in., for Chicago; One No. 2 belted shear to cut 5 x 5 in., for Los Angeles, Cal., and a similar one for Columbia, Pa.; one belted No. 38 to cut 1¼ in., for Springfield, Ill., besides other machinery, including a 3-ton double drum electric hoist and derrick, one No. 61 motor driven shear and a No. 38 belted shear for Eastern shipment.

The new plant which the Wilbraham-Green Blower Company, Philadelphia, Pa., is erecting at Pottstown, Pa., will consist of a machine shop, 85 x 200 ft., with a 10-ton electric traveling crane running the entire length of the building; power house, pattern storage building two stories high, and an office building. A spur from the Philadelphia & Reading Railroad will run through the machine shop. The company is now moving its machinery and expects to be installed in its new plant between November 1 and 15.

Power Plant Equipment.

The Virginia Light & Water Company, Virginia, Minn., is arranging to install a steam plant consisting of two 200-hp. boilers and a 500-gal. pump. This equipment is to be installed in a brick power house which will be erected to accommodate it.

Oliver L. Baer, Pittsburgh, has sold a 4000-hp. Reilly multi-coil feed water tube heater to be installed in the boiler plant of A. M. Byers & Co.'s new works at Girard, Ohio.

N. C. Davis, Keenan Building, Pittsburgh, has sold a 100-hp. Riverside gas engine and an 80-kw. generator, to be installed in the electric light plant at Phillippi, W. Va.; 25-hp. gas engine and an Aldrich duplex pump and outfit with a capacity of 300,000 gal., Kittanning Brick & Fire Clay Company, Kittanning, Pa.; 200,000-gal. steam pump, East McKeesport Water Company, Wilmerding, Pa.; two 10-hp. Bessemer gas engines, McGinnis-Smith Company, Pittsburgh; motor rotary pump to be used as a sewage ejector in the new office building to be erected by the Henry W. Oliver estate, Pittsburgh, and a 30-hp. Bessemer gas engine to Taylor & Dean, structural iron manufacturers, Pittsburgh.

The Danville Light, Heat & Power Company, Danville, Ind., has purchased a site for a new and larger plant, of steel, brick and cement construction, 50 x 114 ft. It will supply Plainfield and Brownsburg as well as Danville.

The New York Air Brake Company has leased for a term of years, with an option of purchase, the plant of the Watertown Engine Company, which it will take over on November 1. It will utilize the plant for the manufacture of a special type suction gas engine, and will also continue the present business of the Watertown Engine Company. A little later additional machinery will be added and the plant increased.

The Board of Water Commissioners, Canandaigua, N. Y., has requested an appropriation of \$35,000 to be used for installing two motor driven centrifugal pumps, 2,500,000 gal. capacity each. Bids will be called for by the Board of Water Commissioners as soon as the appropriation is granted. Electric power from the Ontario Light & Traction Company will be used to operate the pumps.

The County Board of Supervisors, Yonkers, N. Y., has authorized the Almshouse Committee to prepare specifications for furnishing and installing one additional pump and engine in connection with the sewage disposal plant at the County Almshouse.

The Williamsville Electric Light & Power Company, Williamsville, N. Y., is having plans prepared for a new power house, 50 x 50 ft. Water turbines and generators will be installed.

Articles of incorporation of the Elbridge Engine Company, Rochester, N. Y., have been filed. The company is incorporated with \$25,000 capital stock and is to manufacture and deal in engines. The directors for the first year are Lyman J. Seely, George E. DeLong and W. H. Salmon, all of Rochester.

The Albany & Hudson Railroad, R. H. Smith, general manager, Albany, N. Y., is receiving bids for an addition to its power house at Stuyvesant Falls. The following equipment will be installed in the new building when completed: One 1500-kw. turbo-generator, new boilers, stack, condenser, excitor, pumps and appurtenances.

Foundries.

The Central Foundry Company, Milwaukee, Wis., contemplates a number of plant improvements which it intends to make this fall with a view to increasing its facilities. This work will be undertaken in the belief that business conditions during the coming year will be greatly improved and that the present is an opportune time to take care of such work.

The Hildreth interests in the Hildreth Mfg. Company, Lansing, Mich., have been acquired by R. H. Scott and E. F. Peer, president and vice-president of the company. N. E. Hildreth, treasurer and superintendent of the gasoline engine department, will sever his connection with the company as soon as his successor is appointed. Mr. Hildreth leaves the company after a continuous service of over 15 years at the plant, which has a daily capacity of about 14 tons of castings, used principally by manufacturers of gas engines and automobiles.

The Gibbs Foundry & Machine Company, Watsontown, Pa., has acquired the old Susquehanna Foundry & Machine Works, which it is repairing preparatory to placing it in operation for the manufacture of furnaces and attachments that can be supplied to hot air furnaces, making a combination heater, giving hot air for the first floor and hot water for the upper floors. Sufficient capital has been secured to operate the plant on a large scale. C. A. Gibbs is manager.

Bridges and Buildings.

The Pittsburgh Bridge & Iron Works, Rochester, Pa., has received a contract from the Berger Mfg. Company, Canton, Ohio, for the erection of three steel buildings, requiring 300 tons of steel, also an order for another building at Mansfield, Ohio, 125 tons, a crane runway at Erie, 100 tons, and miscellaneous orders amounting to 200 tons.

A charter has been granted under Pennsylvania laws to the Independent Bridge Company, a Pittsburgh corporation, which will engage in the erection of bridges and various steel structures. E. C. Chalfant is the manager.

Vollkommer & Co., engineers and contractors, Empire Building, Pittsburgh, have received a contract for a 65 x 100 ft. steel building, as an extension to the cold rolled department of the Interstate Steel Company, Brackenridge, Pa. The present equipment will be sufficient for an increased output in this department. The new building will be completed about November 25.

Fires.

The plant of the Greater New York Metallic Bed Company, Philadelphia, Pa., was burned October 11, the loss being about \$40,000.

The plant of the Columbus Machinery Company, Columbus, Miss., was damaged \$20,000 by fire October 9.

Hardware.

The plant of the Canada Nut Company, Niagara Falls, has been purchased by the Ingersoll Nut Company, which is identified with the John Morrow Screw, Ltd., Ingersoll, Ont. It has not yet been determined whether the business will be continued at Niagara Falls or Ingersoll.

The Iron and Metal Trades

Railroad Inquiry Slightly Better.

Pig Iron Markets Uniformly Dull.

October promises to be remembered as a month in which the iron market drifted after having shown through a succession of months measurable gains in buying power. With the elections less than three weeks ahead, there is no disposition to discount the outcome, though here and there buyers are announcing what they will do in the way of contracts after November 3. Some signs are recognized of preparations by the railroads to take care in the near future of imperative needs, particularly in equipment.

Steel manufacturers have found in the situation in the past half year proof that the wear and tear demand of the country calls for an increase in commonly accepted estimates. It is now evident, however, that the production of Standard Rails, which is the product to suffer most from the depression, will be less than 40 per cent. of the average output of the past two years. The South Chicago and Ensley mills have been best employed, the former having a record of 50 per cent. operation for the year. Of actual Rail orders only about 5000 tons are reported in the past week, the Illinois mill taking 3300 tons from the Missouri, Kansas & Texas. At Chicago considerable improvement is noted in the buying of Track Supplies.

Structural business shows some life, though comparisons with the volume of work passing through the fabricating shops a year ago are far from encouraging. In the past week the Carolina, Clinchfield & Ohio bridge contract, 3000 tons, has been closed and the New York Central has taken 3000 tons for bridges for its belt line at Buffalo. Bids are going in this week for 6000 tons for the McKinley Traction Syndicate bridge over the Mississippi River at St. Louis. At Pittsburgh a conference of fabricators last week discussed the conditions resulting from recent indiscriminate competition, but no steps were taken to bring about a change.

Among Plate orders is one for 6000 tons for the 1000 car contract recently let by the Chicago & Alton.

Steel Bar specifications have been a conspicuously good feature in finished material, but in the Sheet and Tin Plate trades operations are much restricted. Probably less than 50 per cent. of Sheet mill capacity is at work and of Tin Plate mills less than 40 per cent.

The export trade continues very satisfactory. Argentina is one of the most promising fields for Rail orders just now, and British mills have closed a fair business there.

All Pig Iron markets are conspicuously dull. In the East good inquiries have come up for Iron for next year, and there are relatively larger uncovered requirements for this year than in Central and Western districts. As for several months, the business done in all parts of the country goes largely to the furnaces nearest the consumer.

Coke contracts for the first half of next year are up for consideration, but furnacemen and producers are well apart on price. The reported purchase by the Algoma Steel Company from the Pocahontas Coke Company is a contract renewal. After being shut down for some time the Sault mill is starting, and its coke requirements for the year are put at 150,000 to 200,000 tons.

The Lake Superior Ore movement for the year is now estimated at 22,000,000 to 23,000,000 tons.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Oct. 14, Oct. 7, Sept. 9, Oct. 9,
1908. 1908 1908. 1907.

PIG IRON , Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	\$16.75	\$16.75	\$16.50	\$20.00
Foundry No. 2, Southern, Cincinnati	15.75	15.75	15.50	21.25
Foundry No. 2, Local, Chicago	16.50	16.50	17.00	22.50
Basic, delivered Eastern Pa.	15.50	15.50	15.25	18.50
Basic, Valley Furnace	14.00	14.25	14.50	19.50
Bessemer, Pittsburgh	15.90	15.90	15.90	22.90
Gray Forge, Pittsburgh	14.40	14.40	14.40	20.40
Lake Superior Charcoal, Chicago	19.50	19.50	19.50	28.50

BILLETS, &c. , Per Gross Ton:				
Steel Billets, Pittsburgh	25.00	25.00	25.00	28.50
Forging Billets, Pittsburgh	27.00	27.00	27.00	31.00
Open Hearth Billets, Phila.	26.20	26.20	26.20	31.00
Wire Rods, Pittsburgh	33.00	33.00	33.00	36.00
Steel Rails, Heavy, at mill	28.00	28.00	28.00	28.00

OLD MATERIAL , Per Gross Ton:				
Steel Rails, Melting, Chicago	14.75	14.75	15.00	17.00
Steel Rails, Melting, Phila.	15.00	15.00	15.25	16.25
Iron Rails, Chicago	18.00	18.00	16.75	20.25
Iron Rails, Philadelphia	19.50	20.50	20.00	20.50
Car Wheels, Chicago	15.25	15.25	15.50	24.50
Car Wheels, Philadelphia	15.00	15.00	15.00	23.00
Heavy Steel Scrap, Pittsburgh	15.25	15.00	14.25	17.25
Heavy Steel Scrap, Chicago	13.50	13.00	13.00	15.00
Heavy Steel Scrap, Philadelphia	15.00	15.00	15.25	16.00

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia ..	1.45	1.45	1.45	1.75
Common Iron Bars, Chicago	1.50	1.50	1.50	1.78
Common Iron Bars, Pittsburgh ..	1.40	1.40	1.40	1.70
Steel Bars, Tidewater, New York ..	1.56	1.56	1.56	1.81
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.60
Tank Bars, Tidewater, New York ..	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.70
Beams, Tidewater, New York	1.76	1.76	1.76	1.86
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater, New York	1.76	1.76	1.76	1.86
Angles, Pittsburgh	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh ..	1.45	1.45	1.45	1.85
Skelp, Sheared Steel, Pittsburgh ..	1.50	1.50	1.50	1.95

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, Black, No. 28, Pittsburgh ..	2.50	2.50	2.50	2.60
Wire Nails, Pittsburgh	1.95	1.95	1.95	2.05
Cut Nails, Pittsburgh	1.80	1.80	1.80	2.10
Barb Wire, Galv., Pittsburgh	2.40	2.40	2.40	2.50

METALS , Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	13.75	13.75	14.00	15.00
Electrolytic Copper, New York ..	13.37½	13.50	13.85	14.75
Spelter, New York	4.77½	4.85	4.75	5.40
Spelter, St. Louis	4.62½	4.70	4.62½	5.20
Lead, New York	4.35	4.45	4.60	4.68
Lead, St. Louis	4.30	4.30	4.45	4.52
Tin, New York	29.25	29.50	30.50	34.70
Antimony, Hallett, New York	7.75	7.75	8.00	11.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	\$3.89	\$3.89	\$3.89	\$4.09

Chicago.

FISHER BUILDING, October 14, 1908.—(By Telegraph.)

In some lines of mill products improvement is noted both in specification and new orders. New Steel car construction, while as yet relatively light is furnishing the mills some much needed tonnage in the Structural Shape and Plate departments. This has been increased by additional contracts which include 681 Steel gondola cars of 60-ton capacity, placed by the Illinois Central Railroad with the Cambria Steel Company, for delivery at the rate of 40 cars per day beginning November 1, and 200 Steel and 20 wooden passenger cars ordered by the Harriman lines from the Pullman Company. There is a considerably better movement in Track Supplies, orders for which are not only more numerous, but are for larger lots. Of standard Rails, 5000 tons, all for immediate shipment, represents the aggregate of new orders taken last week by the Illinois Steel Company. The No. 1 Rail mill at the South Works continues in operation, though gaited down to moderate capacity, and has business enough to keep it running in this way for several weeks. Both the Sheared and Universal Plate mills are again active, the only finishing mill at this plant now idle being the Light Rail mill. Another Open Hearth furnace has been started, making 11 under heat. The aggregate of Structural Shapes for bridge and car construction placed by the railroads last week was 66,000 tons. A large amount of Steel for building structures is being figured on, but the more important contracts of this kind are slow in coming to closure. On the whole, however, mill specifications are considerably im-

proved. Steel Bar specifications are coming out in larger volume, and the demand for Sheets is holding its own. There are no transactions of interest in Pig Iron, but the Scrap market holds firm with slight advances on some grades, notably Heavy Melting Steel and Old Steel Rails. The general disposition among buyers seems to be to wait until after the election before making commitments for future requirements.

Pig Iron.—Very little new business developed last week. What buying there was concerned the requirements of the smaller consumers, which are largely for immediate delivery, though here and there some lots ranging from 200 to 500 tons have been sold for shipment through the first quarter. No change has taken place in the Southern situation, the principal Alabama furnaces not having receded from their price of \$13, Birmingham, for No. 2 Foundry. Some business, it is reported, is being done on this basis in the South and West, but consumers in Northern territory find nothing attractive at the present time in such values, nor is it likely their views will be changed in this respect so long as Northern Iron is available at \$16.50, at furnace. Quite a number of inquiries are coming in for forward shipments covering the first quarter and half of next year, but as far as can be learned no sales of considerable tonnage have resulted. At the same time it is evident that some of the large consumers are seriously contemplating entering the market with a view to closing contracts for this period, and it is likely that within the next week or two furnaces will be asked to figure on noteworthy quantities. The commencement of a general buying movement prior to the November elections is, in the opinion of operators, hardly to be expected, but it is believed that there is in the aggregate considerable Iron, the placing of orders for which is now being deferred, but will come soon thereafter. Together with stock in yards and Iron due on contracts, it is estimated that the needs of melters for the remainder of the year are fairly well supplied. Interest, therefore, centers mainly in the establishment of a satisfactory price basis between consumers and producers for next year's business. The following quotations are for October, November and December delivery, f.o.b. Chicago:

Lake Superior Charcoal.....	\$19.50 to \$20.00
Northern Coke Foundry, No. 1.....	17.00 to 17.50
Northern Coke Foundry, No. 2.....	16.50 to 17.00
Northern Coke Foundry, No. 3.....	16.00 to 16.50
Northern Scotch, No. 1.....	17.50 to 18.00
Southern Coke, No. 1.....	17.35 to 17.85
Southern Coke, No. 2.....	16.85 to 17.35
Southern Coke, No. 3.....	16.35 to 16.85
Southern Coke, No. 4.....	15.85 to 16.35
Southern Coke, No. 1 Soft.....	17.35 to 17.85
Southern Coke, No. 2 Soft.....	16.85 to 17.35
Southern Gray Forge.....	15.35 to 15.85
Southern Mottled.....	15.10 to 15.60
Malleable Bessemer.....	17.00 to 17.50
Standard Bessemer.....	17.65 to 18.10
Jackson Co. and Kentucky Silvery, 6 %	19.90 to 20.40
Jackson Co. and Kentucky Silvery, 8 %	20.90 to 21.40
Jackson Co. and Kentucky Silvery, 10 %	22.90 to 23.40

(By Mail.)

Billets and Rods.—Sales of only a few small lots, mainly carloads, of Forging Billets are reported for the week. Aside from Steel Axle requirements for the construction of new cars, recently placed, little new work is coming up to increase activities in the forge shops. The price on Forging Billets is \$28.50, base, Chicago, which, we are advised, is generally maintained. Wire Rods show little change. Specifications continue to come out in a volume proportionate to the output of Wire products. We quote the following prices, which are said to be uniformly held: Bessemer, \$33; Basic, \$34; Chain, \$33, all at Pittsburgh.

Rails and Track Supplies.—Included in the new Rail orders booked by the Illinois Steel Company last week are 3300 tons for the Missouri, Kansas & Texas Railroad, and an aggregate of 1700 tons, composed of smaller orders from other roads. All of these orders are for immediate shipment. Besides the contracts actually closed, there are 2500 tons of Standard Rails pending. The business offered from the roads in Track Supplies this week shows considerable improvement. Several orders of Bolts and Spikes ranging from 1000 to 3000 kegs have been added to those on the books of the Illinois Steel Company, whose business in these lines is now averaging about 4000 kegs per week, and as much more is going to the Carnegie Steel Company. The Joliet Bolt and Spike mills have forward orders booked sufficient for six weeks' work. A lot of 200 tons of Street Car Rails has been taken by the Pennsylvania Steel Company, and an order for 1500 tons of Standard Section Rails for an electric traction line has been secured by the Cambria Steel Company. Specifications for 800 tons accompanied the latter order, and the remainder is for prompt delivery. Recent offerings of Light Rails have fallen off slightly. Prices are unchanged with the exception of a little firming up on Bolts, which are advanced 5c. per 100 lb. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.90c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.20c., base, Square Nuts, and 2.30c. to 2.35c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., \$26; 20-lb., \$27; 16-lb., \$28; 12-lb.,

\$29. Standard sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—While several contracts are pending which include an aggregate tonnage of considerable size, few noteworthy closures have been made. All the orders taken by the American Bridge Company were for lots of less than 100 tons, except one of 200 tons for the Consolidated Power Company, Deadwood, S. D. The Modern Steel Structural Company, Waukesha, Wis., was the successful bidder on a public letting on a highway bridge at Ottawa, Ill., amounting to 902 tons. This is a four-span structure with one bascule span of 117 ft. The successful bid for this contract was \$61,490, the next lowest being \$74,400, and the highest \$99,000; the offerings included erection of the superstructure and roadway. Bids are to be opened this week on 7000 tons for the McKinley bridge over the Mississippi River at St. Louis; about 2000 tons, required for approaches, will be let later. Prices were submitted on about 500 tons for the Great Northern Railway, but no awards have been made. Plans for the Dolese & Shepard Company stone crusher plant at Gary, Ill., are now in the hands of fabricators for figures. Owing to alterations in the size of the plans as originally designed, and the substitution of wood and concrete in various structures, the quantity of Steel required has been cut from 2200 to 600 tons. A contract for 500 tons has been let by the Pullman Company to the Kenwood Bridge Company. Of the railroad business in the market, the McClintic-Marshall Construction Company secured 2600 tons from the Northern Pacific, and the Wisconsin Steel Company 200 tons from the Chicago, Milwaukee & St. Paul. The Missouri, Kansas & Texas is asking figures on 450 tons. About 4000 tons of Structural Shapes for the construction of 1000 cars recently ordered by the Chicago & Alton went to the Illinois Steel Company. The mills are better supplied with specifications than for some time. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., 1/4-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

* **Plates.**—The principal new business placed is comprised of the Plates that will enter into the construction of the 1000 cars recently ordered by the Chicago & Alton Railway. This amounts to 6000 tons, and will be rolled by the Illinois Steel Company. Orders and specifications from other sources are light, and consist chiefly of small lots for immediate use. Large jobbing interests are not increasing their stocks, being content to order only for necessary replacements. Prices are still being shaded up to \$2 a ton by a few mills, but conditions in this respect are not materially changed. We quote mill shipments as follows: Tank Plates, 1/4-in. and heavier, wider than 6 1/4 and up to 100 in. wide, inclusive, car lots Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for 1/4-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, 1/4-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—Reports from both mills and jobbers agree in the statement that business has, at least, not decreased in volume. Galvanized Sheets hold the lead in demand, with Light Black Sheets following, fairly strong. The heavier gauges of Black Sheets, however, are less active. Regular prices continue to be cut from \$1 to \$2 a ton. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—The leading interest reports a very satisfactory volume of business in specifications against Steel Bar contracts. These have increased considerably during the present month, and the mills of the principal interest are now being operated at between 80 and 85 per cent. of capacity. But for hesitation due to pre-election causes, specifications would probably be heavier than they are. Little new business is coming out, owing to the fact that manufacturers generally have their requirements well covered by contracts. The demand for Iron Bars continues quiet, and orders coming to the mills are generally accompanied with requests for rush shipments. While the outside mills in this district are

running a little fuller in Steel departments, no gain is apparent in the Bar Iron output. Prices on both Steel and Iron Bars are, we are advised, being well maintained. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13, and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge, and heavier, 1.58c., half extra Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—Buyers still adhere to the policy of confining purchases to cover only nearby needs. These have not increased in volume, and if they show any improvement at all it is too slight to be noticeable. The following mill discounts are quoted: Black Pipe, $\frac{3}{4}$ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, $\frac{3}{4}$ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, $\frac{3}{4}$ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—There is some buying of Locomotive Tubes by the railroads, which reflects a little more activity in repair work. Merchant Tubes are extremely quiet, the movement so far showing no evidence of renewed activity among the boiler shops. Mill quotations, for future delivery, on the base sizes, are as follows: $2\frac{3}{4}$ to $4\frac{1}{4}$ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; $2\frac{1}{2}$ in. and smaller, and lengths over 18 ft., and $2\frac{1}{2}$ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to $1\frac{1}{2}$ in.....	35	35	35
$1\frac{3}{4}$ to $2\frac{1}{4}$ in.....	50	35	35
$2\frac{1}{2}$ in.....	52½	35	35
$2\frac{3}{4}$ to 5 in.....	60	47½	47½
6 in and larger.....	50	35	..

Merchant Steel.—Specifications for miscellaneous agricultural shapes and specialties used by Hardware manufacturers are coming out in fairly satisfactory volume. There is also a somewhat better demand for Tire Steel from the vehicle makers. The new orders being entered are few, and are generally for small lots, both from jobbers and manufacturers. We quote, as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to $1\frac{1}{2}$ x $\frac{1}{2}$ in., 1.73c., base, Steel card; Iron Finish, $1\frac{1}{2}$ x $\frac{1}{2}$ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, $\frac{3}{4}$ to 1 in., 2.08c., and $1\frac{1}{4}$ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, $7\frac{1}{4}$ c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting on contracts for 100 tons and over, 57 per cent. off; 56 per cent. off in car lots; 52 per cent. in less than car lots, on which carload freight is allowed within base territory.

Cast Iron Pipe.—Water Pipe orders of considerable size are few and far apart, and even the smaller lettings are not as plentiful as they were a few weeks ago. A dropping off in the demand, however, is usually expected at this season of the year. The only municipal tonnage of any consequence reported as advertised for bids is 400 tons for La Crosse, Wis. The 900 tons for Hope, Ark., noted in last report as up for letting, will be placed by the general contractors. The business now moving is comprised largely of the smaller sizes, there being nothing doing in sizes larger than 24 in. The railroads are buying practically nothing. The rate of freight on Cast Iron Pipe has been advanced 25c. a ton, effective October 1, in Central and Western territory, covering shipments to all points north of the Ohio River from the South. Prices are unchanged, and we quote nominally, per net ton, Chicago, as follows: Water Pipe, 4 in., \$27; 6 to 12 in., \$26; 16 in. and up, \$25, with \$1 extra for Gas Pipe.

Metals.—Consumers are adhering closely to hand to mouth purchases in supply of their current needs. There is but scant demand for Copper, the price of which shows no fluctuation of importance. Users are not disposed to add to their stocks further than necessity demands, and it is believed that many are holding off until after election. Quotations are as follows: Casting Copper, 13½c.; Lake, 13¾c. to 14c., in car lots, for prompt shipment; small lots, $\frac{1}{4}$ c. to $\frac{3}{8}$ c. higher; Pig Tin, car lots, 32½c.; small lots, 34½c.; Lead, Desilverized, 4.60c. to 4.65c., for 50-ton lots; Corroding, 4.85c. to 4.95c., for 50-ton lots; in car lots, $2\frac{1}{4}$ c. per 100 lb. higher; Spelter, 4.80c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is \$7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13¾c.; Copper Bottoms, 12c.; Copper Clips, 13¾c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass, 7c.; Lead Pipe, 4.30c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

Old Material.—An inquiry for Heavy Melting Steel for shipment to the Pittsburgh District, coupled with a demand

for a moderate tonnage of the same material by a local mill interest, has advanced the price of this grade 50c. a ton. The former circumstance, however, does not seem to be backed by conditions that are likely to result in heavy purchases for shipment to that market, as the difference in values is not wide enough at present to afford a profitable basis for such transactions. One sale of 100 tons of Heavy Melting Steel to a local consumer at \$14 is reported, and it is said that the same interest has offered to take upward of 1000 tons at this price. The Rerolling Steel Rails offered by the railroads last week, of which there were several fair-sized lots, brought top prices, some sales netting \$16 on connecting lines. Other material included in these lists also commanded fair prices, although a large portion of the 16,000 tons offered was diverted to other markets. A manufacturer of metal beds is reported to be in the market for 1000 tons or more of No. 1 Cast. This and Stove Plate and Light Scrap are in a little better demand, though sales are usually of lots of limited tonnage. The large dealers do not seem inclined to let their accumulated stocks go at the present level of prices, which, it is claimed, is not high enough to net a desirable margin of profit. The market is, therefore, being supplied mainly by material from first hands. The railroad offerings to be closed this week consist of 1550 tons from the St. Paul, and 5500 tons from the Baltimore & Ohio; the latter including 2000 tons of Rerolling Steel Rails. The following prices are per gross ton, f.o.b. Chicago:

Old Iron Rails.....	\$18.00 to \$18.50
Old Steel Rails, rerolling.....	16.00 to 16.50
Old Steel Rails, less than 3 ft.....	14.75 to 15.25
Relaying Rails, standard sections, subject to inspection.....	21.50 to 22.50
Old Car Wheels.....	15.25 to 15.75
Heavy Melting Steel Scrap.....	13.50 to 14.00
Frogs, Switches and Guards, cut apart.....	14.00 to 14.50
Mixed Steel.....	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates.....	\$16.50 to \$17.00
Iron Car Axles.....	20.00 to 20.50
Steel Car Axles.....	17.50 to 18.00
No. 1 Railroad Wrought.....	13.50 to 14.00
No. 2 Railroad Wrought.....	12.50 to 13.00
Railway Springs.....	13.00 to 13.50
Locomotive Tires, smooth.....	13.25 to 13.75
No. 1 Dealers' Forge.....	10.75 to 11.25
Mixed Busheling.....	8.25 to 8.75
Iron Axle Turnings.....	7.00 to 7.50
Soft Steel Axle Turnings.....	7.00 to 7.50
Machine Shop Turnings.....	7.00 to 7.50
Cast Borings.....	5.50 to 6.00
Mixed Borings, &c.....	5.50 to 6.00
No. 1 Mill.....	8.00 to 8.50
No. 2 Mill.....	7.00 to 7.50
No. 1 Bollers, cut to Sheets and Rings.....	8.50 to 9.00
No. 1 Cast Scrap.....	13.50 to 14.00
Stove Plate and Light Cast Scrap.....	11.75 to 12.25
Railroad Malleable.....	12.50 to 13.00
Agricultural Malleable.....	11.25 to 11.75
Pipes and Flues.....	10.25 to 10.75

San Francisco.

SAN FRANCISCO, CAL., October 7, 1908.

The Iron and Steel trade has shown a noticeable improvement in nearly all lines in the latter part of September and the first few days of this month. Buyers still manifest a tendency to conservatism, but demands are more general than they have been for some time, and in one or two departments business promises to assume comparatively large proportions. The local machine shops are all fairly employed at present, and there is a slight increase of activity among the foundries. The Pig Iron market is still in a rather demoralized condition, and there is no particular movement in Cast Iron Pipe. Merchant Pipe and oil well supplies are in moderate demand, as development in the oil fields is being carried on more actively, but the movement of Merchant Pipe from the East is very small, as the local jobbers are well stocked. While little business has developed in mining machinery, the mining and logging railroads as well as other small railroad lines on the Coast are now coming into the market for supplies. More inquiries for both light and standard Steel Rails have been received in the last 10 days than for many months previous, and while few deals have yet been concluded, there is a prospect of a very fair volume of business in this line before the end of the month. The demand for miscellaneous materials for railroad work is also becoming more general, and the increasing movement in these lines seem to indicate that many of the smaller roads are beginning to depart from their policy of cutting down expenditures. Jobbers report some activity in Steel Plates, as the result of a number of riveted Steel Pipe contracts, and there is a prospect of a good demand for Steel Bars and Wire products.

Structural Material.—The local building situation offers considerable encouragement, as new plans for class A construction are announced almost daily and numerous contracts have been placed in the last two weeks. While there is little work of much magnitude under way, enough is being started to call for a considerable tonnage. The increase in the valuation of San Francisco building permits issued last month over that of August indicates a general resumption

of activities, the amount being \$3,799,543, the largest of any month so far this year, in comparison with \$2,450,000 for the month previous. Building projects of moderate size are being carried out with very little delay, as money is rapidly becoming available in larger quantities. Many of the savings banks are now making loans for buildings purposes, and funds are also being secured with less difficulty from other sources. Numerous building projects are also being carried out in other parts of the State, and a considerable tonnage has been contracted for outside work in the last few weeks. Steel Bars for reinforced concrete construction are beginning to move again in some volume, though the demand is by no means as great as a year ago. The outlook in this line is good. Several hundred tons of twisted Bars have been placed for a large hotel at Sacramento, Cal., and the contract for 600 tons for the State Prison at San Quentin has been let. The Smith-Rice Company has taken a contract for the Structural Steel work on the San Francisco National Bank Building, at the corner of California and Lidesdorff streets, and the Ralston Iron Works has taken a contract for the Steel and Cast Iron for a building on Market street, near First, for \$11,855. Work is being started on the Louis A. Levy Building, at the corner of Van Ness avenue and Geary street, the Steel and Iron for which will be furnished by August Heckscher. A contract for Iron and Steel on a seven-story structure on Ellis street, near Mason, has been awarded to W. B. Kyle. Several large municipal structures are now in prospect, and one or two may be under way some time next year. Sketch plans for the City and County Hospital, to cost some \$200,000, have been approved, and contracts will probably be let next January. It has now been about decided to tear down the old City Hall and erect an entirely modern structure to accommodate the offices of the city, though it is doubtful whether any work will be done on this project in the near future.

Pig Iron.—While the local foundries have a little more work on hand than last month, they are by no means busy and the consumption of Pig Iron shows no material increase. All the foundries are carrying stocks sufficient to last them for months and show no inclination to increase their holdings at present. There is no business of any consequence for future delivery, though some holders are offering liberal inducements. It is difficult to quote any definite prices, as the market is too dull to fix an established figure. Some No. 3 Pig Iron has been offered as low as \$20, but \$24 is about the lowest figure at which No. 1 English, Scotch or Chinese Pig Iron is now offered, while some brands, for which there is a little demand, are held as high as \$30.

Cast Iron Pipe.—Cast Iron Pipe remains dull, some of the larger handlers reporting no inquiries in the last two weeks. The local situation is quiet, as neither the gas company nor the water company shows any inclination to take up the work of repair on a large scale, and there is a prospect of much delay before the Pipes are laid for the new fire protection system. Some business, however, is developing in the southern part of the State and the outlook is good for a moderate activity before long, as a large number of new water works projects are being started in the interior towns. There is nothing under way at present to call for any heavy tonnage, and there is no prospect of a large movement of Cast Iron Pipe for some time. Quotations in San Francisco are unchanged, being as follows: 4 to 6 in., \$36; 8 to 12 in., \$35; over 12 in., \$34, with \$1 extra for Gas Pipe.

Merchant Pipe.—The jobbing movement of Merchant Pipe shows a decided increase since the middle of September, more than making up for the former dullness. The jobbing trade in general, however, has been well supplied and lively competition has brought about considerable cutting of prices. The movement from manufacturer to jobber is still very small, as few of the jobbers show any inclination to add to their stocks at present. Prices to jobbers, however, are strictly maintained. The differential on Steel Pipe in car-load lots is unchanged, as follows:

	Steel.	
	Black.	Galv.
1/2 to 3/4 in.....	56.5	40.5
3/4 in.....	58.5	44.5
1 in.....	60.5	48.5
1 1/4 to 6 in.....	64.5	54.5
7 to 12 in.....	61.5	46.5
Extra strong, plain ends:		
1/2 to 3/4 in.....	49.5	37.5
3/4 to 4 in.....	56.5	44.5
4 1/4 to 8 in.....	52.5	40.5
Double extra strong, plain ends:		
1/2 to 8 in.....	45.5	34.5

Scrap.—There are heavy accumulations of Scrap Iron and Steel in San Francisco, with very little market for them. The larger handlers are holding out for former prices, but many small dealers have larger stocks than they can afford to carry and are unloading at whatever they can get. The local foundries are getting small lots of heavy Cast Iron Scrap as low as \$13, and will not buy much at that price. There is no movement of any importance in

Scrap Steel, though two lots of less than 100 tons were shipped to England recently, one lot consisting of Old Rails.

Richard B. Carr, San Francisco manager of sales for the Carnegie Steel Company, is now in the East.

The John A. Roebling's Sons Company's new five-story reinforced concrete building, at the corner of Folsom and Hawthorne streets, is now practically complete and the stock is being made in.

The Union Iron Works has been appointed agent for Williamson Bros. & Co., Philadelphia, and for the American Ship Windlass Company.

After an existence of 50 years the Fulton Iron Works is to go out of existence. The determination on the part of the directors to give up the struggle against unfavorable conditions was reached about two weeks ago, after consultations with their attorney and some of the creditors. A meeting of creditors was called last week, and a plan was formulated for closing out the company's affairs and paying off all liabilities. A statement was made showing assets of \$1,028,149, which leaves a surplus over and above liabilities of about \$396,000. In addition to this sum there is stock fully paid up to the amount of \$200,000, making a total of nearly \$600,000 leeway for the creditors. President Shiers says: "The molders' strike of about 16 years ago was the turning point in the iron works of San Francisco. A great deal of work then went East, and people here found they could get fairly good deliveries, except on emergency orders, and began to buy regularly in the East. Many Eastern machinery houses accordingly sent agents to this city and opened branches here, and they have taken a great amount of Iron work, which is lost to San Francisco."

The Stockton Iron Works is building a large skid dredger for the American Dredging Company, which is working on the Government canal east of Stockton, Cal., on the Calaveras River. The machine is in the nature of an experiment and is intended for work where water cannot be obtained to float an ordinary dredger.

The Willamette Iron & Steel Works, Portland, Ore., is about to start work on two new vessels for the Government for use on Puget Sound.

The Campbell-Kelly Company has been incorporated in Tonopah, Nev., with a capital stock of \$60,000, by H. P. Campbell, W. T. Kelly and J. C. Cole. It will carry on a foundry business.

The Armstrong Mfg. Company has been organized in Portland, Ore., by E. P. Armstrong, J. M. Crook and Clarence H. Gilbert, with a capital stock of \$35,000. It will engage in a machinery business.

St. Louis.

St. LOUIS, October 12, 1908.

As St. Louis is an important manufacturing center, it, of course, has a variety of interests in that line, both great and small, in the scope of their business. With these establishments there are some whose output at this season of the year is very materially increased, while with others the demand is on the wane for a time, and in reporting conditions this normal state of matters should be reckoned with. In illustration of this it should create no surprise that the demand for Iron and Steel from certain interests is not so active, though this is more than offset by a marked gain in other directions. Nearly all the offices report orders for various lines, accompanied with urgent requests for prompt shipment, which feature has interesting significance. There is beginning to be complaint of car shortage at the South, and engines are also, it is claimed, badly needed. Certain roads are said now to be urging delivery of engines ordered last year, which delivery had previously been required to be postponed.

Coke.—The market for Coke has latterly not shown any activity beyond a number of sales of small lots for prompt shipment. In the early part of last week a leading house secured an order for 1500 tons for prompt shipment and another house reports inquiry for 700 tons shipment up to July, 1909. The drought in the Collinsville District is causing considerable inconvenience through delayed shipments and also tends to strengthen prices. We quote 72 hr. Connellsville Foundry at over, \$2.25 to \$2.50, with some brands held at a premium. The lower price is for prompt and the higher price for shipment over 1909.

Pig Iron.—While there are some foundrymen in the market for Pig Iron, as shown by inquiries and sales reported by the principal sales agencies, there is an evident disposition on the part of buyers to confine their purchases to small lots or hold off altogether. Most of the business, actual and prospective, has requirement for either immediate or last quarter shipment. A leading house reports sales for the week totalling 2000 tons. Another seller, the middle of the week, closed a deal for 600 tons for shipment from November to April, inclusive. Other houses report conditions quiet except a fair number of orders for small lots. These orders are, for the most part, from small consumers. There are still being received requests both to an-

ticipate deliveries and for hurrying forward shipments en route. The price range is \$12.50 to \$13 for balance of the year, and \$13 for first quarter 1909, f.o.b. Birmingham, for No. 2 Foundry. It is understood on some Alabama Iron and some resale Iron the market price of \$13 is shaded 50c. per ton.

Finished Iron and Steel.—The demand for Structural Material is still characterized by the receipt on the part of the leading sellers of numerous orders for contracts which cover buildings of medium size. These sales indicate a steady though moderate increase of business not only in the city, but in the section for which St. Louis is the distributing center, reaching as far south as Texas, from which State, and Oklahoma, the bulk of the orders are received, though some good sized orders are coming from Memphis, Tenn. In Bars the demand is ruling steady, and there appears to be more disposition on the part of jobbers to carry stocks. From railroad sources orders for light material for track and shop work are becoming more plentiful and for increased quantities. The demand for Light Rails has fallen off, but there has been an inquiry made by a trunk line for 3000 tons of Standard Rails for prompt shipment.

Old Material.—A slight improvement is reported in the tone of the market owing to continued operations by the local mills that recently started up, some of which have increased their working force. There has, however, been no material change in values, with not enough consumptive demand to warrant classing the market other than that of mainly dealers' transactions, since the majority of the operations are of that character. The Missouri Pacific Railroad has a list out of 1000 tons and the Wabash Railroad is offering 200 tons of miscellaneous Scrap. We quote, as follows, per gross ton, f.o.b. St. Louis:

Old Iron Rails.....	\$16.50 to \$17.00
Old Steel Rails, rerolling.....	15.50 to 16.00
Old Steel Rails, less than 8 ft.....	14.25 to 14.75
Relaying Rails, standard sections, subject to inspection.....	23.00 to 24.00
Old Car Wheels.....	15.00 to 15.50
Heavy Milling Steel Scrap.....	13.50 to 14.00
Frogs, Switches and Guards, cut apart.....	13.50 to 14.00
Mixed Steel.....	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates.....	\$15.00 to \$15.50
Iron Car Axles.....	18.50 to 19.00
No. 1 Railroad Wrought.....	13.50 to 14.00
No. 2 Railroad Wrought.....	12.50 to 13.00
Railway Springs.....	13.00 to 13.50
Locomotive Tires, smooth.....	13.00 to 13.50
No. 1 Dealers' Forge.....	11.50 to 12.00
Mixed Borings, &c.....	5.50 to 6.00
Machine Shop Turnings.....	8.00 to 8.50
No. 1 BOLLERS, cut to Sheets and Rings.....	9.50 to 10.00
No. 1 Cast Scrap.....	12.00 to 12.50
Railroad Malleable.....	11.00 to 11.50
Agricultural Malleable.....	10.00 to 10.50
Pipes and Flues.....	8.75 to 9.50

Lead, Spelter, Etc.—Lead is weak at 4.30c. Lead Ore is \$26 per 1000 lb. f.o.b. Joplin. The demand is slow. Spelter is stronger with 4.70c. bid, but no sales. We learn that a large quantity has recently been purchased by a leading brass manufacturer at an advance on the current market price. Zinc Ore is ruling at 36c. to 37c. per ton, Joplin basis.

The Christopher & Simpson Architectural Iron & Foundry Company reports an improved demand for Structural Steel from the Southwest, and a moderate demand for Steel in the city, for structures of medium size.

The Geo. J. Fritz Foundry & Machine Company states that it is having some call for Laundry Machines, the manufacture of which is the company's specialty.

It is expected that ground will be broken for the new post office building in about two weeks. This structure is to cost \$1,250,000.

The shops of the leading railroads in St. Louis territory are now open and busy in repair work.

Birmingham.

BIRMINGHAM, ALA., October 12, 1908.

Pig Iron.—The business offered in this market the past week was of hardly sufficient volume to test the strength of quotations, but the attitude of sellers is apparently unchanged. A schedule of \$13 Birmingham is being adhered to for deliveries covering the remainder of this year and the first quarter of next, and recent transactions indicate the maintenance of such a basis. The principal consideration among latest transactions, however, was 300 tons of 4 per cent. Silicon Iron which sold at \$14 per ton Birmingham. A number of carloads for early shipment are reported sold on the basis of \$13, and an effort to secure 150 tons of No. 2 at \$12.50 per ton Birmingham, cash, is known to have been unsuccessful. One of the small producers recently refused 300 tons for delivery in the first quarter at \$13 per ton. An inquiry for 1400 tons of No. 3 Foundry, shipment to commence promptly, is pending, as well as for a comparatively small lot of Charcoal Iron. The latter grade is quoted firmly at \$20 f.o.b. furnace. Considerably more in-

terest is evinced by the trade generally, and a period of some activity is expected to follow the Presidential election, but there is some speculation as to the ultimate level of prices. Present indications favor the maintenance of the \$13 schedule on deliveries for the remainder of this year, and, so far as can be ascertained, no lower figures have been named on deliveries further advanced. Producers are in some instances more or less apprehensive as to the result which Iron in the hands of merchants will have on the market. The extent of engagements for speculative purposes is not definitely known, but there have been some recent additions. It is quite improbable that the surplus production will have become a factor at the beginning of the new year, although the available capacity will no doubt be equal to a material improvement in the demand.

Cast Iron Pipe.—No addition has been made to the list of prospective lettings since last report, and producers generally expect a quiet market for the next 30 days. The contracts for Hope, Ark., and Lenoir, N. C., which covered approximately 1000 tons each of Water Pipe, were awarded the Dimmick Pipe Company, Birmingham. The figures at which these orders were placed are not given out. On comparatively small lots, which are fairly satisfactory in the aggregate, published quotations have been maintained, but an average of prices received in all recent transactions would probably result in lower figures than has been anticipated. The demand for Cast Iron Soil Pipe has improved and preparations are being made for the operation of additional producing capacity. We quote Water Pipe as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., \$24; 8 in. to 12 in., \$23; over 12 in., average, \$22, with \$1 per ton extra for Gas Pipe. These quotations are probably shaded on large municipal contracts.

Old Material.—A moderate volume of Light Cast and Stove Plate is being moved and prices received are satisfactory. The resumption of operations at one of the idle mills in this district is expected to result in some demand for Steel Scrap at an early date. There is practically no demand for Old Car Wheels, with similar reports as to Iron Rails and Axles. Dealers' asking prices are as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$14.50 to \$15.00
Old Iron Axles.....	15.50 to 16.00
Old Steel Axles.....	13.00 to 13.50
No. 1 Railroad Wrought.....	13.50 to 14.00
No. 2 Railroad Wrought.....	10.50 to 11.00
No. 1 Country Wrought.....	11.00 to 11.50
No. 1 Machinery.....	11.00 to 11.50
No. 1 Steel.....	9.50 to 10.00
Stove Plate and Light Cast.....	9.50 to 10.00
Cast Borings.....	5.00 to 5.50

Pittsburgh.

PARK BUILDING, October 14, 1908.—(By Telegraph.)

Pig Iron.—The recent blowing in of several blast furnaces in the two valleys, with the consequent large increase in output, principally in Basic Iron, is commencing to tell on prices of that grade which are soft and lower. Several large inquiries for Basic for the first four and six months of 1909 are in the market, and a sale of 5000 tons of Basic for first quarter has been made, at \$14.25, Valley furnace. We also note a sale to a local Steel concern of 5000 tons of Basic, all for shipment this year, at about \$14, Valley furnace, or \$14.90, Pittsburgh. There is not much doing in Bessemer or Foundry Iron, but there is a fair amount of inquiry for Malleable Bessemer, which ranges in price from \$14.25 to \$14.50, Valley furnace. Small sales of Bessemer from carloads up to 100 tons bring about \$15, Valley furnace. We quote standard Bessemer Iron at \$15, Basic \$14, Malleable Bessemer \$14.25 to \$14.50, No. 2 Foundry \$14.35 to \$14.50, and Forge \$13.50, all at Valley furnace, with a freight rate of 90c. a ton for Pittsburgh delivery.

Steel.—There is little inquiry for Billets or Sheet and Tin Bars, consumers being covered by contracts, but shipments by the mills against specifications are fairly heavy. The forges are taking out a larger tonnage of Forging Billets than they were some time ago. We quote Bessemer and Open Hearth Billets, 3½ in. and larger, up to and including 0.25 carbon, \$25; 0.26 to 0.60 carbon, \$1 extra; over 0.60 carbon, \$2 extra, all f.o.b. Pittsburgh. For Wheeling, Martins Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are \$27, f.o.b. Pittsburgh. Forging Billets take \$2 advance over Rolling Billets.

(By Mail.)

A little freer buying is observed, and the new orders entered are showing a marked increase. Specifications against contracts are also coming in well, and if present conditions are maintained for the next two weeks October will show a material increase in actual orders entered and tonnage shipped out by the mills over September. Basic Pig Iron is fairly active, and some large inquiries are out for the shipment over the first half of next year. The market on Basic Iron is soft, however, and reports are that

\$14.25, at Valley furnace, has been shaded on some desirable business for Western delivery. There is not much inquiry for Bessemer, which is reasonably firm, at \$15. Valley furnace. Foundry Iron prices are fairly steady, but not much tonnage is being sold. A fair amount of Steel in Billets, Sheet and Tin Bars is moving out from the mills, but few new orders are being placed, most consumers being covered by contracts. The Pipe trade continues moderately active and shipments by the mills against contracts for Steel Bars are showing an increase. The market on Old Material is firm, and prices on some lines are higher. Negotiations are under way for Furnace Coke, for delivery over the first half of next year, but as yet no large tonnage has been sold, the ideas of the furnacemen and the Coke makers as to prices being somewhat apart. As a whole, the situation is showing betterment, but it comes very slowly.

Ferromanganese.—Although inquiry is light, prices are firm, and it is still the opinion of sellers that they may soon be higher. We quote 80 per cent. foreign at \$42.50 to \$43, seaboard, for prompt shipment, the rate to Pittsburgh being \$1.95 a ton. For future delivery from \$1 to \$2 more is asked.

Ferrosilicon.—A violent break has occurred in the price of this material, and we now quote 50 per cent. Ferrosilicon at \$65 to \$65.50, Pittsburgh. We note a sale of about 75 tons, to be delivered at the rate of 25 tons a month for the next three months at about \$65, Pittsburgh.

Muck Bar.—The market is absolutely stagnant as regards new orders. We quote best grades of Muck Bar, made from all Pig Iron, at \$25, Pittsburgh.

Wire Rods.—Consumers of Wire Rods are specifying quite freely against contracts, but very few new orders are being placed. Prices are firm, and we quote Bessemer Rods at \$33; Basic, \$34, and Chain Rods, \$33, Pittsburgh.

Skelp.—No new Skelp orders of moment have been placed in this market for a long time. The mills rolling Skelp are able to operate only part time, as the Pipe mills have been but light buyers for a good while. Prices are nominally as follows: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.60c. to 1.70c., and Sheared Iron Skelp, 1.70c. to 1.75c., f.o.b. Pittsburgh.

Steel Rails.—While some in the trade believe that the railroads may come in after the election and place large contracts for next year's delivery, it is pointed out that they have so much trouble in financing loans that little in the way of new business may be expected for some time. There is a good demand for Light Rails, the Carnegie Steel Company having taken about 1800 tons in the past week. Prices on Light Rails rolled from Billets, which are still being shaded from \$1 to \$2 a ton for Rerolled Rails, are as follows: \$25 for 25 to 45 lb. Sections, with \$1 advance for 20 lb., \$2 advance for 16-lb., and \$3 advance for 12-lb. Standard Sections are \$28, at mill, and Angle Splice Bars, 1.65c., at mill.

Plates.—A little more activity is observed among the Plate mills. New orders coming in from the boiler shops are few, as most of these are running to very light capacity. Hardly enough new orders are coming up to test prices, but there is still a disposition on the part of some mills that do not roll the very large sizes to shade prices from \$1 to \$2 a ton, and this competition is usually met by the larger mills. Regular prices on Plates are as follows: Tank Plates, $\frac{3}{4}$ in. thick, 6 $\frac{1}{4}$ in. up to 100 in. wide, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, $\frac{3}{4}$ in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered $\frac{3}{4}$ -in. Plate. Steel Plates over 72 in. wide must be ordered $\frac{3}{4}$ -in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under $\frac{1}{4}$ -in. to and including 3-16-in. Plates on thin edges.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates..	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Locomotive Firebox Steel.....	.50
Shell grade of Steel is abandoned.	
For widths over 100 in. up to 110 in.....	.05
For widths over 110 in. up to 115 in.....	.10
For widths over 115 in. up to 120 in.....	.15
For widths over 120 in. up to 125 in.....	.25
For widths over 125 in. up to 130 in.....	.50
For widths over 130 in.....	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

Structural Material.—Some fairly large orders have been placed and a good deal of work is now in sight. The McClintie-Marshall Construction Company has taken 2200 tons of girder bridge work for the Northern Pacific Railroad,

and the American Bridge Company has closed some bridge work for Western roads. Bids have gone in on a good deal of work, among which is a bridge for the Iowa Central across the Mississippi River at Keithsburg, 4000 tons; an electrical railroad bridge at St. Louis, 6000 tons; a viaduct for the Cincinnati Southern at Cincinnati, 2700 tons; additional work for the Grand Central Station, New York City, 1600 tons, and a city building in Chicago, 11,000 tons. Bids have also been asked on one section of the Northwestern Railway Station at Chicago, about 4000 tons. A meeting of the Structural Steel fabricators was held on Tuesday in the offices of the Jones & Laughlin Steel Company in this city to see if plans can be devised for bettering the situation in the Structural trade, but at this writing nothing has been given out as to what action was taken. Prices on fabricated work are still ruinously low, being in many cases below cost to concerns that have to buy their plain material. We quote f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, $\frac{1}{4}$ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than $\frac{1}{4}$ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

Sheets.—We note quite an active demand for Corrugated Sheets, one mill that rolls Iron Sheets advising us that it has work ahead for the next three or four weeks. Black and Galvanized Sheets are quiet, jobbers still pursuing the policy of placing orders only for actual needs. It is estimated that at present less than 50 per cent. of the entire Sheet capacity is active. Prices are still being shaded, but it is stated that this is not being done to the extent it was two or three weeks ago, several mills that were naming low prices on Sheets now quoting very close to official prices. For shipment from mill, regular prices, which are shaded by some mills from \$1 to \$2 a ton, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, \$1.75 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, for 2 $\frac{1}{2}$ -in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—Good orders for Tin Plate have been placed in the past week by the canning interests for delivery next spring, and we are advised that some large additional contracts from the same trade are under negotiation. About 40 per cent., perhaps less, of the Tin Plate capacity is active at present. Prices continue to be shaded to some extent, the amount of the concession depending largely on the nature of the order. The regular price of Tin Plate is \$3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Hoops and Bands.—Some small orders are being placed, but the bulk of the shipments being made by the mills are on specifications against contracts which are coming in fairly well. We quote: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Iron and Steel Bars.—New orders for both Iron and Steel Bars are still light and not very numerous, but specifications against contracts are coming in at a good pace, and shipments of Steel Bars by the mills in October promise to show a large increase over September. Stocks held by jobbers are low, and on new orders requests are usually made for prompt shipment. In Iron Bars the situation is only fairly active, the mills continuing to run intermittently, operations depending on the number of new orders booked. We are advised that prices on Steel Bars are being absolutely held, and this applies in a large measure to Iron Bars. We quote Iron Bars at 1.40c., base, for Pittsburgh delivery, and 1.35c., base, for Western points, to which freight is added, except Chicago, the price for which is 1.50c., delivered. We quote Steel Bars at 1.40c., Pittsburgh, for base sizes.

Merchant Steel.—Specifications against contracts placed by the implement makers some time ago are coming in quite freely, and shipments by the mills in October are practically certain to show an increase over last month. On the few small orders being placed, buyers still insist on prompt shipments, showing conclusively that stocks held by jobbers are very light. Prices on Shafting are fairly well maintained, only the very large orders being allowed an extra discount over regular prices. We quote Cold Rolled Shafting at 57

per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Prices on Merchant Steel are being shaded, regular quotations being as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b. at mill.

Railroad Spikes.—Only small orders for Spikes for repair work are coming in from the railroads, but the demand for the smaller sizes continues active, and the mills have a good deal of tonnage on their books and are somewhat behind in deliveries. We quote: Standard sizes, 4½ x 9-16 in., at \$1.70, and the smaller sizes at \$1.80 per 100 lb. in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh:

Spelter.—Prices have shown a sharp advance. We now quote prime grades of Western Spelter at about 4.70c., East St. Louis, equal to 4.82½c., Pittsburgh.

Merchant Pipe.—The Ohio Fuel Supply Company was in the market for 25 miles of 8-in. Line Pipe, but the prices quoted by the mills on this inquiry were so uniform and so high that it decided to lift 15 miles and relay it, with the result that it is now inquiring for 57,000 ft. of 8-in., which has not yet been placed. There is also an inquiry in the market for 6 to 7 miles of 4-in. Pipe. The general demand is holding up well, and the leading Pipe mills are able to operate to 60 per cent. or more of capacity. Prices on Iron Pipe, which were being shaded more or less, are now very firm, most mills quoting regular discounts. On Steel Pipe prices are absolutely firm, and no concessions are being made. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

Merchant Pipe.		Jobbers, carloads, Steel.	
		Black.	Galv.
1/8 to 1/4 in.	.....	67	51
3/8 in.	.....	69	55
1/2 in.	.....	71	59
3/4 to 6 in.	.....	75	65
7 to 12 in.	.....	72	57
Extra strong, plain ends:			
1/8 to 3/8 in.	.....	60	48
1/2 to 4 in.	.....	67	55
4 1/2 to 8 in.	.....	63	51
Double extra strong, plain ends:			
1/8 to 8 in.	.....	56	45

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
1/8 to 1/4 in.	65
3/8 in.	67
1/2 in.	69
3/4 to 6 in.	73
7 to 12 in.	70
Extra strong, plain ends:		
1/8 to 3/8 in.	58
1/2 to 4 in.	65
4 1/2 to 8 in.	61
Double extra strong, plain ends:		
1/8 to 8 in.	54

Boiler Tubes.—Practically no new orders are being placed by the railroads for Boiler Tubes beyond an occasional small order for repair work. The demand for Merchant Tubes is also dull, and prices are somewhat demoralized. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. or more is allowed in carloads, are as follows: For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

Boiler Tubes.		Iron.	Steel.
1 to 1 1/4 in.	.....	42	47
1 1/4 to 2 1/4 in.	.....	42	50
2 1/4 in.	.....	47	61
2 1/2 to 5 in.	.....	52	65
6 to 13 in.	.....	42	59
2 1/2 in. and smaller, over 18 ft. long, 10 per cent. net extra.			
2 1/2 in. and larger, over 22 ft. long, 10 per cent. net extra.			

Iron and Steel Scrap.—Last week the Pennsylvania Railroad sold a heavy tonnage of Scrap, and prices secured on nearly all grades showed a marked advance over the previous sale by this road. Heavy Steel Scrap went at about \$15.25, Pittsburgh; No. 1 Rerolling Rails at about \$17.25; Cast Scrap at about \$14.50, and Malleable Scrap at about a \$14.50 basis for Pittsburgh delivery. The lists of the Pennsylvania Railroad East, the Baltimore & Ohio and the New York Central closed on Tuesday, and the Norfolk & Western list will close October 16. The demand for Scrap is quite active, a good deal of tonnage having been sold by dealers. In fact, the present demand for Scrap seems to be larger than the available supply, with the result that prices are very firm, and on most lines are higher. We quote, per gross ton: Heavy Steel Scrap, for Pittsburgh, Follansbee, Monessen, Sharon and Steubenville delivery, \$15.25 to \$15.50; Heavy Steel Scrap for hand charged Open Hearth furnaces, pieces weighing 10 lb. minimum to 300 lb. maximum, \$1 a ton higher; Cast Iron Borings, \$9.25 to \$9.50;

Bundled Sheet Scrap, \$12.50 to \$12.75; No. 1 Busheling Scrap, \$14.25 to \$14.50; No. 2, \$10.75 to \$11; No. 1 Railroad Wrought Scrap, \$16.75 to \$17; No. 1 Cast Scrap, \$14.75 to \$15; Iron Axles, \$22.50 to \$23; Sheet Bar Crop Ends, \$19 to \$19.25; Low Phosphorus Melting Stock, guaranteed 0.04 and under in Phosphorus, \$18.50; Rerolling Rails, \$17.50 to \$17.75; Steel Axles, \$19.50 to \$20; Grate Bars, \$12.50 to \$12.75; Old Car Wheels, \$15.50 to \$16; Machine Shop Turnings, \$10.25 to \$10.50; Railroad Malleable Scrap, \$14.50 to \$14.75; Iron Rails, \$19; Locomotive Tires, \$17 to \$17.25, all f.o.b. Pittsburgh. We note sales of about 1000 tons of Railroad Wrought Scrap at \$16.75, delivered Mahoning Valley; 500 tons of Heavy Steel Scrap at \$15.50; 200 tons of Locomotive Tires, smooth inside, at \$17.50; 700 tons of Wrought Iron Turnings at \$10.25; 500 tons of Cast Iron Borings at \$9.75; 200 tons of Heavy Cast Scrap at \$14, and 100 tons of Old Iron Rails at \$19, all f.o.b. Pittsburgh.

Coke.—Some inquiry is in the market for Furnace Coke for delivery over the first six months of 1909, but the ideas of the furnacemen and the Coke makers as to prices are far apart, with the result that as yet no large tonnage has been closed. Furnaces as a rule offer about \$1.55 per ton at oven for Furnace Coke for first six months, while the Coke makers ask \$1.85 to \$1.90. Stocks in the yards are unusually heavy, with the result that a good deal of Coke is pressing the market for sale for prompt shipment. We quote Connellsville Furnace Coke for prompt delivery at about \$1.50 and for the balance of the year at \$1.60 to \$1.65, at oven. For shipment over first half of 1909 from \$1.75 to \$1.85 is quoted. Connellsville 72-hr. Foundry Coke is held at \$2 to \$2.25, at oven, but outside makes are offered at lower prices. The output is running close to 200,000 tons a week, which is less than half the output of the Upper and Lower Connellsville regions at this time a year ago.

Philadelphia.

PHILADELPHIA, PA., October 13, 1908.

Founders' Week exercises have engrossed the attention of the trade, and in a large number of instances business was suspended at noon each day of the week. Such orders as developed were to a large extent from out of town sources, but the aggregate volume was not large. Sales were usually small and for prompt shipment, as there seems to be absolutely no disposition to contract ahead in any way, pending the result of the approaching election. While the view taken by the trade regarding the future is more cheerful, confidence is lacking when it comes to undertaking any proposition of importance. Both crude and finished materials have been very dull, and in no branch of the trade has anything like active buying developed.

Pig Iron.—The local market was considerably interrupted by the celebration of the two hundred and twenty-fifth anniversary of the founding of the city of Philadelphia, and business in a majority of cases was practically at a standstill. Some little business developed, but it came largely from out of town sources. Melters, unless in urgent need of Iron, are not placing orders for any large tonnage. There has been some very good inquiry for nearly all grades for forward delivery, but hesitancy is shown when it comes to placing business. The nearness of the approaching election is no doubt responsible for this condition, as prospective buyers seem to think that a delay of a few weeks will make no material difference and that after the election is over plans regarding the future can be more intelligently made. The bulk of the business transacted during the week has been in the Foundry grades, but the individual tonnages taken have in practically every case been small. There is still some No. 2 X Foundry Iron to be had at \$16.75, delivered, but it is rapidly becoming scarcer, considerably more being sold at \$17, delivered, while occasional sales of special lots at a further advance of 25c. are reported. Low grade Irons are still in good demand. The Cast Iron Pipe makers are in the market for some round tonnages, but as a rule are not placing orders at present prices, which they consider high. With the present curtailed production, however, these grades are scarce and few producers have any large tonnage for sale. Southern Foundry Irons have been inactive, as have also the Virginia Irons, irregular sales of small spot lots at full prices being reported. There is a fairly steady demand for Forge Iron. The quantities asked for are not large nor for any extended delivery, but in the aggregate reach a pretty fair tonnage. Prices for standard grades of Forge Iron remain quite firm, as the available supply for early delivery is reported as being small. There is considerable inquiry for Basic Iron, one melter being in the market for 10,000 tons for delivery over the balance of this and the early part of next year. Inquiries for several small lots for delivery the balance of this year have been before the trade, and some has been sold for such shipment at \$15.50, delivered. For any delivery extending into next year sellers are firm, at \$16. Low Phosphorus Iron is inactive, as buyers of this grade do not seem to come into the market very freely, and no sales of importance have been

reported for several weeks. The market on the whole maintains its strength. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range of prices for delivery the remainder of the year are quoted:

Eastern Pennsylvania, No. 2 X Foundry.	\$16.75 to \$17.00
Eastern Pennsylvania, No. 2 Plain.	16.25 to 16.50
Virginia, No. 2 X Foundry.	17.00
Virginia, No. 2 Plain.	16.75
Gray Forge.	15.50 to 15.75
Basic.	15.50 to 16.00
Low Phosphorus.	20.00 to 20.50

Ferromanganese.—A somewhat better demand for both prompt and forward delivery is to be noted. Inquiries for 500 tons for Western shipment and several for smaller lots for nearby delivery are reported. Prices appear to be firmer, and there is again a wider range in quotations. While business could probably be done at \$44.50 to \$45, Baltimore, \$46 to \$47 has been named by some sellers for delivery early next year.

Plates.—There was a rather better run of business during the week. Specifications were larger, but the demand continues irregular. Some fair boat propositions are before the trade, a nearby shipyard having received orders for two 300-ft. steamships. Some little locomotive business has also been coming out, and the trade feels more encouraged regarding future business. Prices are being well maintained, and are quoted as follows, for delivery in this vicinity:

	Parts	Carloads.	carload.
	Cents.	Cents.	
Tank, Bridge and Boat Steel.	1.75	1.80	
Flange or Boiler Steel.	1.85	1.95	
Commercial Firebox.	1.95	2.00	
Marine.	2.15	2.20	
Locomotive Firebox Steel.	2.25	2.30	

The above are base prices for $\frac{3}{4}$ -in. and heavier. The following extras apply:

	Extra per 100 lb.
3-10-in. thick.	\$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Steel Billets.—A slight falling off in the volume of orders is to be noted. Business continues of a day to day character and mills in this territory are just about able to maintain the present curtailed rate of production. Prices are unchanged, Ordinary Rolling Steel being quoted at \$26.20 for delivery in this territory, with \$28.20 named for Forging Steel, subject to the usual extras for high carbons and special sizes.

Structural Material.—The volume of business placed during the week has not been large. Current orders are usually small and of a miscellaneous character, the larger propositions, of which there are several before the trade, including boat, bridge and car work, being rather slow in developing. Prices are fully maintained and for delivery in this territory range from 1.75c. to 1.90c., according to specifications.

Sheets.—A fair run of business continues to come out, but orders are small, and for current consumption only. Mills have very little business ahead, but are able to maintain close to full capacity on day to day orders. Prices are unchanged, and for mill shipment range as follows, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—Sales have been small and irregular. Consumers are inclined to defer placing orders. No heavy tonnages are expected to come out the present month. Prices are somewhat firmer. Refined Iron Bars being quoted at 1.45c. to 1.50c., delivered in this territory, with but very little shading reported. Steel Bars are quoted at 1.55c., delivered, but are not in very strong demand. Rerolled Bars are quoted at 1.50c., delivered in this territory.

Old Material.—The market has again quieted down and during the past week was rather dull. The business transacted was mainly in small spot lots in the leading grades at practically unchanged prices. Consumers as a rule appear willing to pay inside figures, but sellers hold for outside quotations, neither side being disposed to make concessions. For prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory, quotations are nominally as follows:

No. 1 Steel Scrap and Crops.	\$15.00 to \$15.50
Low Phosphorus.	18.50 to 19.00
Old Steel Axles.	21.50 to 22.00
Old Iron Axles.	22.50 to 23.00
Old Iron Rails.	19.50 to 20.00
Old Car Wheels.	15.00 to 15.50
Choice No. 1 R. R. Wrought.	18.25 to 18.75
Machinery Cast.	15.25 to 15.75
Railroad Malleable.	14.00 to 15.00
Wrought Iron Pipe.	13.75 to 14.25
New Bundled Sheets.	13.50 to 14.00
No. 1 Forge Fire Scrap.	12.00 to 12.50
No. 2 Light Iron.	9.00 to 9.50
Wrought Turnings.	11.50 to 12.00
Stove Plate.	13.00 to 13.50
Cast Borings.	11.00 to 11.50
Grate Bars.	13.50 to 14.00

Coke.—The market continues dull. Business has been coming out slowly, and the orders placed have been rather small. Prices are firm, Foundry Coke being quoted from \$2.15 to \$2.40, at oven, with Furnace Coke at \$1.65 to \$1.85, at oven. For delivery in this territory the following range of prices is named:

Connellsville Furnace Coke.	\$3.65 to \$3.90
Foundry Coke.	4.15 to 4.40
Mountain Furnace Coke.	3.25 to 3.50
Foundry Coke.	3.75 to 4.00

Cincinnati.

CINCINNATI, OHIO, October 14, 1908.—(By Telegraph.)

Election excitement is playing havoc with the Iron and Steel trades, and such orders as are being placed are strictly hand to mouth, although correspondence is optimistic, and inquiries partake of good promise for the future, based on satisfactory election results. In the machinery markets standard tools and special machinery are having a very fair sale, everything considered, while some inquiries coming in from the manufacturers of engines, boiler and conveying machinery for Iron suggest confidence in the future, and that the crude product has in the estimation of users about reached the minimum in price. One of the most satisfactory phases of the situation to Iron and Steel men is the constant injunction to hurry shipments on contract, which indicates that there is some consumption which is increasing. The Northern and Eastern furnacemen still have the best of the situation, with Southern producers maintaining a well organized front. Foundries in this territory are increasing their melts slowly. Scrap dealers are still endeavoring to force prices, although some items have slumped off considerably since the first of the month.

Pig Iron.—There is no material change to be noted in prices on either Northern or Southern, save that the minimum price on Northern can probably be shaded for a round tonnage. A number of large manufacturers who are or have been in the past few weeks in the market for Iron are feeling for prices on next year's delivery, and one large Central Ohio interest is buying Foundry and Charcoal Iron, the greater part of which is for 1909 delivery. The Foundry inquiry is reported closed to-day, 1000 tons coming from a nearby furnace, 500 tons from the Valley, and all for the last quarter. The Valley Iron sold on a basis of about \$15.80, delivered. The Charcoal Iron will most likely come from Michigan or Wisconsin, as Lake Superior is specified, 2000 tons in deliveries of 500 tons per quarter, or the option of taking it all at first quarter prices. This Iron is quotable at from \$18 to \$18.50, at furnace. An Ohio Pipe interest is asking for prices on Foundry Iron for delivery to its new plant. A large pump manufacturing interest is asking for prices on 450 tons, each of 2 to 2½ per cent. Silicon, 2 to 3 and 3 to 4 per cent. Silvery Iron, deliveries to extend to July, for its Massachusetts plant. Either Southern or Virginia furnaces will doubtless take this business. A Western electric manufacturing interest wants prices on 200 tons of special analysis Foundry Iron for early delivery. One of the large furnaces on Silvery Iron is reported out of blast, but the blowing in of a new furnace in Jackson County last week leaves still two in Ohio producing High Silicons. This Iron is firm at \$18.50 for 8 per cent. Little is heard now of low grades, the demand seeming to be confined almost entirely to Foundry, Malleable and Basic. Some fear of a car shortage is expressed in this territory, where river transportation has always been a factor in shipments of Coke and Iron. There is no likelihood of water navigation before the first of the year, which fact, coupled with the rapid diminution of idle cars and so many out of commission needing repairs, suggests possible trouble in getting Iron, Coal and Coke if the expected improvement materializes. For early delivery and the last quarter, based on freight rates of \$3.25 from Birmingham and \$1.20 from Hanging Rock, we quote as follows, f.o.b. Cincinnati:

Southern Coke, No. 1.	\$16.25 to \$16.75
Southern Coke, No. 2.	15.75 to 16.25
Southern Coke, No. 3.	15.25 to 15.75
Southern Coke, No. 4.	15.00 to 15.50
Southern Coke, No. 1 Soft.	16.25 to 16.75
Southern Coke, No. 2 Soft.	15.75 to 16.25
Southern Coke, Gray Forge.	14.25 to 14.75
Ohio Silvery, 8 per cent. Silicon.	19.70
Lake Superior Coke, No. 1.	16.45 to 16.95
Lake Superior Coke, No. 2.	15.95 to 16.45
Lake Superior Coke, No. 3.	15.45 to 15.95
Standard Southern Car Wheel.	22.25 to 22.75
Lake Superior Car Wheel.	21.75 to 22.25

(By Mail.)

Coke.—Alabama furnaces are still buying Virginia Coke notwithstanding the ending of the strike troubles and the transfer of a part of oven activities to the Alabama field. It is reported here that 2000 ovens were put out in the Connellsville field last week owing to the continued drought. Virginia Furnace Coke is still quotable at \$1.75, at oven; Foundry, \$2.10 to \$2.25; Connellsville Foundry, \$2.25 and Furnace about \$1.75; Pocahontas quotable at about the same prices as Wise County grades. The new furnaces recently blown in in the north Alabama and lower Tennessee region

are said to be taking any surplus Coke in that district occasioned by the recent lighting of ovens.

Finished Material.—There are some fairly good sales from stores of Structural Iron and Steel, twisted Bars for concrete work and some Boiler Tubes, prices on which are unchanged. One dealer reports that collections have been seriously affected, and that the income from this source had fallen off fully 50 per cent. in the last 30 days. Dealers are quoting to the trade f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, 1/4-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—It is an unusually strong dealers' market. There is practically no buying by consumers locally, although some interesting inquiries for Relayers are reported as coming from the South and Southwest, where favorable weather conditions permit of railroad work during the fall and winter season. Select Railroad Wrought remains firm and some good sales are being negotiated in this territory. Dealers manifest faith in improved conditions after election and are holding firm on the following prices, which are f.o.b. Cincinnati:

No. 1 R. R. Wrought, net ton.....	\$12.50 to \$13.50
Cast Borings, net ton.....	5.00 to 5.50
Heavy Melting Steel Scrap, gross ton..	13.50 to 14.50
Steel Turnings, net ton.....	6.00 to 7.00
No. 1 Cast Scrap, net ton.....	12.00 to 13.00
Burnt Cast, net ton.....	9.00 to 10.00
Old Iron Axles, net ton.....	16.50 to 17.50
Old Iron Rails, gross ton.....	15.00 to 16.00
Old Steel Rails, short, gross ton.....	13.00 to 14.00
Old Steel Rails, long, gross ton.....	12.50 to 13.50
Relaying Rails, 56 lb. and up, gross ton	20.00 to 21.00
Old Car Wheels, gross ton.....	13.00 to 14.00
Low Phosphorus Scrap, gross ton.....	14.00 to 15.00

Buffalo.

BUFFALO, N. Y., October 13, 1908.

Pig Iron.—Specifications against existing contracts continue to come in freely and there is some slight inquiry for forward delivery as well as for immediate shipment, but as a rule buyers are covered for immediate requirements and are now holding off until after the election for the placement of new business of any magnitude. The appended quotations approximate current market prices at Buffalo as closely as possible:

No. 1 X Foundry.....	\$15.50 to \$16.00
No. 2 X Foundry.....	15.25 to 15.75
No. 2 Plain.....	14.75 to 15.25
No. 3 Foundry.....	14.50 to 15.00
Gray Forge.....	14.25 to 14.75
Basic.....	15.00
Malleable Bessemer.....	15.50 to 16.50
Charcoal.....	20.00 to 20.50

Old Material.—The market is decidedly inactive in most lines. Prices are firm, but both dealers and consumers are holding off on transactions involving much tonnage, awaiting the outcome of the election. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy Melting Steel Scrap.....	\$14.50 to \$15.00
No. 1 Railroad Wrought.....	15.00 to 15.50
No. 1 Railroad and Machinery Cast Scrap.....	14.00 to 14.50
Old Steel Axles.....	17.00 to 17.50
Old Iron Axles.....	20.00 to 20.50
Old Car Wheels.....	15.00 to 15.50
Railroad Malleable.....	13.00 to 13.50
Boiler Plate.....	12.00 to 12.50
Locomotive Grate Bars.....	11.50 to 12.00
Pipe.....	11.50 to 12.00
Wrought Iron and Soft Steel Turnings.....	8.00 to 8.25
Clean Cast Iron Borings.....	6.50 to 7.00
No. 1 Bushing Scrap.....	12.50 to 13.00

Finished Iron and Steel.—The volume of orders in Bars, Plates and Railroad Material continues fair, with neither noticeable improvement nor decline. Business in Structural Material is rather lighter, although there are encouraging indications of the development of new business in the near future. The Buffalo Structural Steel Company was the low bidder for 240 tons of Beams and 60 tons of Columns for the Sinclair, Rooney & Co. wholesale building here, and it is expected that the contract will be let this week. It is probable that Bethlehem Shapes will be used. Bids will be received in about a week for 500 tons of Steel and Iron required in the construction of the vaudeville theater at Toronto, which the Shea Amusement Company of Buffalo is to erect. The specifications for Structural Mate-

rial for the Onondaga Hotel, to be erected in Syracuse, at a cost of \$800,000, and which are being prepared by Buffalo architects, will not be issued until after the first of the year.

Cleveland.

CLEVELAND, OHIO, October 13, 1908.

Iron Ore.—The merchant firms are planning to have their Ore shipments pretty well cleaned up by November 1. The movement has held up fairly well so far this month, but it is expected to fall off considerably after this week. The Steel Corporation reduced its shipments about the first of the month by using fewer outside boats, and the owners of several other outside steamers have been notified by the corporation that their boats will be loaded for only one more trip. Some merchant Ore will be shipped in November, but it will be only in small lots. The shipments this month are expected to reach about 4,000,000 tons. Ore men do not expect that the total movement will exceed 23,000,000 tons, and some think that it will not be much over 22,000,000 tons. The market continues quiet. A few small sales are still being made, but it is not expected that any large tonnages will be sold before the close of navigation. Prices at Lake Erie docks; per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range Non-Bessemer, \$3.70; Mesaba Non-Bessemer, \$3.50.

Pig Iron.—The market continues quiet. Few consumers are showing an inclination to cover for their first half requirements until after election, the only inquiry of any size being for 4000 tons of Basic Iron. The largest sales noted during the week comprised 600 tons of No. 2 Foundry and 500 tons of Malleable Bessemer, the former bringing \$15 and the latter \$15.25, at Toledo furnace. A few small sales of Foundry Iron were made to consumers, who needed a little for spot shipment or to fill them out for the balance of the year. Foundries as a rule have small stocks on hand and orders for shipment on contract are fairly good. The melt seems to have improved slightly. Consumers have followed a very cautious policy during the past few months, and it is not believed that any have contracted for more Foundry Iron for the balance of the year than they will use in that time. Prices remain stationary at the level that has prevailed for the past few weeks. Local furnaces quote No. 2 Foundry at \$14.50 to \$15, at furnace, the lower price being named in some cases for outside shipments. The Valley price of \$14.35 to \$14.50, at furnace, is being shaded to \$14.25. The majority of the furnace interests are not disposed to take on business for the first half delivery at present prices. For prompt shipment and for the balance of the year we quote, delivered, Cleveland, as follows:

Bessemer.....	\$15.90 to \$16.15
Northern Foundry, No. 1.....	15.40 to 15.80
Northern Foundry, No. 2.....	15.25 to 15.40
Northern Foundry, No. 3.....	14.90 to 15.25
Gray Forge.....	14.25 to 14.50
Southern Foundry, No. 2.....	16.85 to 17.35
Jackson County Silvery, 8 per cent. Silicon....	20.05

Coke.—No improvement is noted in the demand. Prices remain stationary, with the exception of spot Furnace Coke, which is somewhat firmer, because the output has been curtailed by the drouth. There are practically no inquiries for next year's delivery, for either Furnace or Foundry Coke. Some furnace interests are willing to cover for their requirements for the first half, but producers object to making contracts except for a stated tonnage. We quote Standard Connellsville Furnace Coke, for spot shipment, at \$1.60 to \$1.70, at oven, about the same prices being asked for the balance of the year. We quote 72-hr. Connellsville Foundry Coke at \$2 to \$2.25, at oven.

Finished Iron and Steel.—New business is exceedingly light in all lines. Specifications are holding up fairly well, the volume of orders being about the same as in the previous two weeks, but somewhat lighter than during a portion of September. Orders for Steel Bars are much better than for other lines, the life of the Bar market being the good demand from the implement, rivet, bolt and drop-forging makers. The largest new contract placed during the week was one from the Toledo Shipbuilding Company for 500 tons of Plates and Shapes for repair work. This company has just closed a contract for a 460-ft. freight boat to be built for Rufus P. Ranney and others of Cleveland, which will require about 3500 tons of Plates and Shapes. The Plate situation shows no improvement, new orders and specifications being very light. The most of the new business that is being taken is at a cut of \$2 a ton, that being the price that is quoted by a majority of the smaller mills. The price of Steel Bars, which is generally being held firm, is reported as being shaded by one Western mill. The demand for Iron Bars is very light. The only orders received from railroads for repair work are for small tonnages. Local Bar Iron mills continue to operate at less than their full capacity. The Structural outlook is far from promising. Some fair specifications have come in during the week from bridge building plants, but not much new work is in sight in county and municipal work, and very little in building construction

work is expected to come up in this territory during the balance of the season. The demand for Sheets is light, showing no change. Prices are being shaded from \$1 to \$2 a ton. There is some improvement in the demand for Light Rails from Coal mining companies, and a few car lot sales are reported. Jobbers report that both their mill and warehouse business is holding up fairly well, orders being nearly all for small lots. The largest volume of their orders is for Steel Bars and Structural Shapes. Consumers, as a rule, are holding off as much as possible in the placing of new orders until after election. We quote Iron Bars, 1.45c., Cleveland, for car lots; Steel Bars, 1.50c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, 1/4-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows, these regular prices being shaded: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron and Steel Bars out of stock at 1.65c. to 1.70c., Beams and Channels from warehouse are 2c. and Plates, 1/4-in. and heavier 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2 1/4 to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

Old Material.—The market continues dull. Prices are stationary and fairly firm. No large inquiries are out and the only sales reported are small lots for immediate needs. The majority of the dealers have large stocks on hand and there is less buying of Scrap to hold for higher prices, although some dealers continue to pick up what Scrap they can at bargain prices. The most of the buying by dealers, however, is to fill orders. Sales to consumers are mostly in car lots. The railroad offerings this week include 5000 tons to be sold by the Baltimore & Ohio Railroad. In this list are 2500 tons of Old Steel Rails. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails.....	\$14.00 to \$14.50
Old Iron Rails.....	17.00 to 17.50
Steel Car Axles.....	19.00 to 19.50
Old Car Wheels.....	15.00 to 15.50
Heavy Melting Steel.....	13.75 to 14.25
Relaying Rails, 50 lb. and over.....	22.00 to 23.00
Railroad Malleable.....	13.25 to 13.75
Agricultural Malleable.....	12.00 to 12.50
Light Bundled Sheet Scrap.....	9.50 to 10.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$20.00 to \$20.50
Cast Borings.....	7.00 to 7.50
Iron and Steel Turnings and Drillings.....	8.00 to 8.50
Steel Axle Turnings.....	8.50 to 9.00
No. 1 Bushing.....	12.00 to 12.50
No. 1 Railroad Wrought.....	13.50 to 14.00
No. 1 Cast.....	12.00 to 13.00
Stove Plate.....	10.75 to 11.25
Bundled Tin Scrap.....	8.00 to 9.00

New York.

NEW YORK, October 14, 1908.

Pig Iron.—Business in this market seemed to drop off with September, and there is little apparent prospect of another movement before November. Several good sized inquiries are pending. New England business is still largely in the hands of furnaces in Western New York. Where furnaces recently started up are working to accumulate a backlog occasional contracts are made at cut prices. Some negotiations have been started for next year's Iron, deliveries to the middle and, in some cases, to the end of the year. In other cases founders are known to have uncovered wants for the last two months of this year. We continue to quote, at tidewater, Northern No. 1 Foundry, \$17.25 to \$17.75; No. 2 Foundry, \$16.75 to \$17.25, and No. 2 Plain, \$15.75 to \$16.25. Alabama Irons are quoted \$17.50 to \$17.75 for No. 1 Foundry, and \$16.75 to \$17.25 for No. 2 Foundry.

Steel Rails.—The South Chicago mill has taken orders for 5000 tons in the past week, including 3300 tons for the M., K. & T. It also has 2500 tons pending. No inquiries for 1909 have come up, and it is certain that a large volume of orders which have passed as contracts will go without specifications to the end of this year.

Structural Material.—A good many railroad bridge orders have been placed lately, calling for from 75 to 300 tons of Steel. The Georgia & Florida placed 475 tons with the American Bridge Company, and the Atlantic Coast Line and the Grand Trunk have taken, respectively, 350 and 220 tons. The New York Central's contract for 3000 tons for its Buffalo Belt Line railroad went to the Fort Pitt Bridge Works, Pittsburgh. The 3000 tons for the Carolina, Clinchfield & Ohio is reported to have been awarded to the Pennsylvania Steel Company, and the St. Paul placed 715 tons with the Wisconsin Bridge Company. Locally, 1500 tons for the second section of the Grand Central terminal and 200 tons for yard work are pending, while the Central of New Jersey is asking for 300 tons for a pier on the North River. Several local building contracts are still withheld, and little new work is making its appearance. On plain material we quote as follows, for mill shipments, delivery at

tidewater: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at about 2 1/4c.

Bars.—The situation in the Bar Iron trade appears to be strengthening, influenced by better reports from the West. The Eastern manufacturers have of late more generally adhered to the quotation of 1.40c., at mill, equivalent to 1.50c., tidewater. It may be possible that some Iron can be bought at 1.45c., tidewater, but the number of makers willing to accept that rate has certainly diminished. The volume of business is not large, but the stronger prices are apparently based on the advanced cost of raw materials as the supply of cheap Scrap has, it is said, been practically exhausted and the mills are running on materials costing considerably more. Steel Bars continue to be held at 1.56c., tidewater.

Plates.—The week has been exceedingly quiet. The demand for small lots has shown a further shrinkage. Consumers in this locality appear to be only doing repair work and their shops are running spasmodically. Prices continue to be held as follows, at tidewater, for standard sized Plates: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Ferroalloys.—While there has been continued buying of Ferromanganese, which in some quarters is thought to have exhausted the stray lots which have been a burden on the market of late, we hear of 600 tons of this metal which is still available at \$42.50, f.o.b. Baltimore. We understand that \$44 is being accepted for next year's delivery, as far forward as June. Fifty per cent. Ferrosilicon is still commanding \$68 to \$70, and we hear of a sale of 100 tons made to one of the largest Steel works in this country yesterday. Foreign interests are dominating the market in this line at present.

Cast Iron Pipe.—Some of the large lettings in this vicinity recently advertised are evidently not likely to lead to business. Several of them are not taken seriously in the trade, being regarded as efforts to compel local water companies to make more favorable arrangements with the municipalities. Business is almost at a standstill, even orders for carload lots being quite rare. Pipe manufacturers whose experience has covered several panic periods state that never before have they known the month of October to be characterized by so little buying. Carload lots continue to be nominally quoted at \$24 to \$24.50 for 6-in.

Old Material.—A little demand is noted for Cast Scrap, and some buying has taken place in Heavy Melting Steel Scrap and in Castings and Borings. General business, however, has been extremely dull, with light inquiries. Dealers are holding prices firmly as the quantity of Old Material now coming out is not large, and hope is entertained that the demand may improve after the election. Ruling quotations are as follows, per gross ton, New York and vicinity:

Old Girder and T Rails for melting.....	\$11.50 to \$12.00
Heavy Melting Steel Scrap.....	11.50 to 12.00
Old Steel Rails, rerolling lengths.....	14.00 to 14.50
Relaying Rails.....	22.50 to 23.00
Old Iron Rails.....	16.50 to 17.00
Standard Hammered Iron Car Axles.....	18.50 to 19.00
Old Steel Car Axles.....	15.50 to 16.00
No. 1 Railroad Wrought.....	15.00 to 16.00
Iron Track Scrap.....	12.00 to 13.00
No. 1 Yard Wrought, long.....	14.00 to 14.50
No. 1 Yard Wrought, short.....	12.50 to 13.50
Light Iron.....	7.00 to 7.50
Cast Borings.....	7.50 to 8.00
Wrought Turnings.....	8.50 to 9.00
Wrought Pipe.....	11.00 to 11.50
Old Car Wheels.....	14.00 to 14.50
No. 1 Heavy Cast, broken up.....	13.50 to 14.00
Stove Plate.....	11.50 to 12.00
Locomotive Grate Bars.....	11.50 to 12.00
Malleable Cast.....	12.50 to 13.00

Iron and Industrial Stocks.

NEW YORK, October 14, 1908.

The market for securities has been affected by the complications in Europe. The possibility of a serious war involving several of the great nations of Europe caused rather heavy selling of American securities by European holders, which was particularly noticeable on Friday of last week. Prices were then somewhat depressed, but a recovery occurred as the indications increased of a peaceful settlement of the various points in the international controversy. The iron and steel stocks participated with railroad stocks in the decline and recovery. The Can stocks advanced on the statement that the large holdings of the late W. B. Leeds had been taken over by a syndicate composed of leading stockholders. The range of prices on active iron and steel stocks, from Thursday of last week to Tuesday of this week, was as follows: United States Steel common 45 to 47 1/4, preferred 107 1/4 to 109 1/4; Bethlehem Steel common 22 1/2 to 23, preferred 46 to 46 1/2; Car and Foundry common 39 1/4 to 40 1/4, preferred 102 1/2 to 102 3/4; Locomotive common 46 to 49 1/4, preferred 105; Steel Foundries new, 30 to 35; Cambria Steel 35 1/2 to 36 1/4; Colorado Fuel 33 1/4 to 36 1/4;

Crucible Steel common 6½, preferred 41½ to 42; Pressed Steel common 32 to 33½, preferred 93½; Railway Spring common 36¼ to 38¼; Republic common 21 to 22½, preferred 78 to 80; Sloss-Sheffield common 61¼ to 64; Cast Iron Pipe common 24 to 25¼, preferred 71½ to 72; Can common 6¼ to 7, preferred 65 to 69½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 46½, preferred 109¾, bonds 102½; Car & Foundry common 40, preferred 101½; Locomotive common 48, preferred 105; Colorado Fuel 35¼; Pressed Steel common 32½, preferred 92; Railway Spring common 37½; Republic common 22¼, preferred 78; Sloss-Sheffield common 64; Cast Iron Pipe common 24¼, preferred 71½; Can common 7¼, preferred 68¾.

Dividends.—The International Steam Pump Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable November 2.

The Harbison-Walker Refractories Company, Pittsburgh, has declared a quarterly dividend of 1½ per cent. on its preferred stock, payable October 20.

Metal Market.

NEW YORK, October 14, 1908.

Pig Tin.—There has been a steady decline throughout the week, but very little business going through in this market. Monday showed the only buying activity, but it was due to the absolute dullness preceding that this day's transactions are worth commenting on. In actual volume the business done even on that day was of little significance. In London there was much greater activity, especially yesterday, when 1300 tons were sold. It is said that one of the chief operators there threw over large lots of spot with the natural result of a wide break in prices. London is supposed to possess the biggest stocks held there in a long time. Here stocks are only fair, but in view of the absence of consumptive demand no apprehension is felt, as it is held that as this is an off season there is ample time for transferring some of the large London stock to this side in case of an increase in demand. Reports concerning shipments from the Straits vary between 4100 and 5000 tons for the month. Prices here during the week were as follows:

	Cents.
October 7.....	29.50
October 8.....	29.50
October 9.....	29.35
October 12.....	29.20
October 13.....	29.10
October 14.....	29.25

The London market closed about £2 lower than last week, with £132 7s. 6d. for spot, and £134 2s. 6d. for futures.

Copper.—This metal continues to be extremely dull, and uninteresting. Sales for consumption are very meagre here, though in London there was a little buying early in the week. Stocks in Europe continue to pile up, and it is estimated that there are 50,000 tons in England alone at present, as compared with 12,000 to 15,000 tons this time last year. On the Continent, it is said, there is about as much metal now as in England. Odd lots of Lake may be picked up here at 13½c., although most dealers are quoting 13¼c., while some are, indeed, asking 14c., in the absence of real customers. Electrolytic is offered at 13½c. to 13¼c. The London market was quoted to-day at £59 15s. for spot, £60 12s. 6d. for futures, and £63 for Best Selected. These figures, it will be noted, are just a shade above those named a week ago.

Waterbury Average.—The Waterbury Average for August was 13.75c.

Pig Lead.—Tempting buyers, which we understand have not yet come forward, the American Smelting & Refining Company has cut prices. Late last Wednesday it came out with an "official" cut of 10c., lowering its quotations from 4.60c. to 4.50c., New York. This, it seems, failed to produce the desired effect, for yesterday it again made a similar reduction, leaving the price at this writing 4.40c. There was no excited scramble for the metal to-day, and the feeling in the trade is that the market must come down still lower. The big producers have been holding the umbrella over the independents for some time, and are still holding it, despite their cutting. The independents are looking for customers now, naming 4.35c. to 4.40c., New York. The London market is quoted £13 6s. 3d. to-day.

Spelter.—The market is a shade higher, at 4.77½c. to 4.82½c. here and 4.62½c. to 4.67½c. in St. Louis. Stocks in this country are very large, but they are said to be in the control of strong interests. London cables £19 15s. at the close to-day.

Aluminum.—Th price of No. 1 Ingots has been cut to 29c., and the new price of 36c. has been named for Sheets. This reduction is so marked that it has occasioned considerable comment in the trade, and has caused speculation as to what the next move will be.

Antimony.—The European market is firm, but everything is very quiet here, owing to the large stocks on hand. Cookson's is still quoted 8c. to 8¼c.; Hallett's 7¼c. to 8c., and other brands 7½c. to 7¾c.

Nickel.—The metal remains unchanged, at 45c. for 10-ton lots, and 50c. to 60c. for smaller quantities.

Tin Plates.—Prices are unchanged, at \$3.89, New York, and \$3.70, Pittsburgh, for 100 lb. IC Coke Plates.

Old Metals.—The demand is fair, but consumers are only supplying their immediate needs. Dealers' selling prices are as follows:

	Cents.
Copper, Heavy and Crucible.....	12.50 to 12.75
Copper, Heavy Wire.....	12.25 to 12.50
Copper, Light and Bottoms.....	11.50 to 11.75
Brass, Heavy.....	9.00 to 9.25
Brass, Light.....	7.25 to 7.50
Heavy Machine Composition.....	11.75 to 12.00
Clean Brass Turnings.....	8.25 to 8.50
Composition Turnings.....	9.50 to 9.75
Lead, Heavy.....	4.12½ to 4.25
Lead, Tea.....	3.75
Zinc Scrap.....	3.25 to 3.50

M. A. Hanna & Co. Will Build More Furnaces at Buffalo.—Two more blast furnaces will be built in Buffalo by M. A. Hanna & Co. of Cleveland. An option has been secured on 2,500 ft. of water front on the Niagara River, and the deal for the land will be closed soon. The work of erecting the new furnaces will be started about the first of the year. Each will have a daily capacity of about 300 tons. The two furnaces will be erected simultaneously, and it is expected that they will be ready for operation in the latter part of 1910. The site selected is between Buffalo and Tonawanda, a short distance nearer Buffalo than the new plant of the Wickwire Steel Company. In connection with the new furnaces ore docks will be built and the most modern machinery for handling ore will be installed. Before the stacks are completed the improvements that are being made by the government in the Niagara River will be finished, and large ore boats will be able to discharge their cargoes directly on the new Hanna docks. M. A. Hanna & Co.'s lease of the three furnaces of the Buffalo Union Furnace Company, which was made for 10 years, expires in about two years, and is not to be renewed. The Buffalo Union furnaces will then revert to the owners, and M. A. Hanna & Co. will try, by the erection of the new furnaces, to hold the trade they have built up in the East.

The Mesta Machine Company, Pittsburgh, has just secured a contract from the Tennessee Coal, Iron & Railroad Company, Ensley, Ala., for two long crosshead blowing engines, with steam and air cylinders 84 in. in diameter and 60 in. stroke. These low pressure engines will be compounded with steam high pressure engines now doing duty in the Ensley plant, and which this company furnished some time ago. The Mesta company now has 24 engines of this type in operation at the Ensley plant, and those just ordered will make a total of 26, the largest installation of engines in any one place in the country by a single concern. The Mesta company also has a contract for the building of a 600-ton metal mixer for the Ensley plant, which will undoubtedly be the largest metal mixer in operation in the United States, the ones now in use being rated at 300 tons capacity per day. The machinery will be operated by hydraulic pressure, and will consist principally of cast steel, the large lockers weighing about 60 tons each. The shell will be made of heavy steel plates and will be furnished by John Mohr & Son, Chicago.

Notices have been posted at all the mills of the Carnegie Steel Company in the Sharon District announcing a readjustment of wages in all departments, taking effect January 1, 1909. Whether there will be any reduction in wages of the men will not be known until the schedules are made out in December. Under the terms of the scales under which the men work three months' notice is required for either side before a change in rates can be made.

A Pennsylvania charter has been granted to the Bethlehem Steel Products Company, Bethlehem, Pa., a corporation said to have been formed to act as a selling agent for the Bethlehem Steel Company. The capital of the company is nominal. The three incorporators named are President Archibald Johnston of the steel company, Barry H. Jones and Eugene G. Grace, of South Bethlehem.

The Machinery Trade.

NEW YORK, October 14, 1908.

The demand for machinery the past week was very light, and in view of the spurt in business a few weeks ago, at which time it was hoped that a steady improvement had begun, some houses are discouraged by the scanty orders and inquiries received. Few of the large interests appear to be active, and some of them that have practically placed orders for machine tools are withholding the final details, so that the orders cannot be entered and shipped. A greater tendency to hold off until conditions improve has developed, and consequently no new propositions of magnitude have come up that will require the immediate purchase of any considerable amount of machinery. The trade is much interested in the plans of the Erie Railroad to electrify part of its system for suburban travel, and while the project will call for the purchase of a large amount of mechanical equipment, it will be some time before that part of the work will be reached. Supply dealers, especially those who handle power plant accessories, report an exceedingly light demand.

The demand for small power equipment is not as good as the trade was led to expect from the inquiries that came in last spring and early in the summer. The proportion of orders resulting from the inquiries made in the trade was small as compared to the usual results, and this, it is said, is largely due to the fact that many buildings which were projected for erection this fall are not to be constructed for a time at least. Power men who follow the situation closely in this respect state there were many disappointments among prospective builders, chiefly because of the fact that they were not able to finance their ventures. This does not mean that the projects were entirely given up, and the trade is hoping now that in the spring there will be more money in circulation and the plans of the real estate and construction operators will mature.

National Machine Tool Builders' Convention.

An interesting programme has been arranged for the fall meeting of the National Machine Tool Builders' Association, which will take place Tuesday and Wednesday, October 20 and 21, at the Hotel Imperial, New York. Fred L. Eberhardt, president of the association, and the other officers have made extra efforts to make the meeting an attractive one to the members, and besides the usual committee reports and the annual election of officers there will be a number of addresses on subjects of live interest to the trade. Capt. Godfrey L. Carden, who has been traveling in Europe for the Bureau of Manufactures of the Department of Commerce and Labor investigating machine tool business, especially in the Continental countries, will make an address detailing the machine tool situation there, and J. W. Carrol of the *American Machinist*, who has also recently been among machinery men in Europe, will talk along the same lines. Harrington Emerson, engineer, 30 Church street, New York, will make an address on the subject of the system of paying employees, and he will refer to various methods of offering employees a bonus and other paying systems.

The American Street & Interurban Railway Association is holding its twenty-seventh annual convention at Atlantic City, N. J., and there are a large number of exhibits on Young's Pier of material used in the construction and operation of street railroads.

Erie Railroad's Electrification Plans.

Plans are being prepared by the the Erie Railroad engineering department for electrifying a section of the company's New Jersey service, and this will result in the purchase of power equipment and other machinery and equipment aggregating several million dollars. The estimates now being made up provide for electrifying the system to Suffern, N. Y., a distance of 32 miles, and the indications are that it will not be long before there are some substantial inquiries in this market for machinery and equipment to carry out the project. The statement has been made that E. H. Harriman had pledged \$14,000,000 to enable the railroad to electrify more than 100 miles of its New Jersey suburban service, but this has not been confirmed and the report was no doubt based on the fact that several months ago the company's engineers prepared an estimate for electrifying about 120 miles of the company's system, which would then have cost something like that sum. It is not thought by the Erie engineers that the construction of 32 miles of road will necessitate a proportionate expenditure of the original estimate, and with a view to obtaining an idea as to the exact amount of the proposed expenditure new specifications and estimates are being prepared. It is stated that it is hardly probable that the length of the road originally estimated upon will be electrified in the immediate future, but

it is admitted by Erie officials that the construction of 32 miles of road now being estimated upon will be begun as soon as the engineering details are completed. In addition to the construction material and operating equipment, the company will have to buy some special rolling stock for its electrical system and the trade generally will be benefited by the buying.

Another Erie project that will call for some large purchasing is the construction of new car shops at Hornell, N. Y., a site for which was purchased some time ago. The construction of the shops at that point was put off from time to time during the last few months, but now it is stated that at least some of the work will be done during the winter months, while the shops may be completed some time next year.

Some large purchasing has been done of late by the Tennessee Coal, Iron & Railroad Company, which, it is understood, is for the company's furnaces and steel plant at Ensley, Ala., where it was announced \$2,000,000 is to be spent for improvements. These improvements include the remodeling and rebuilding of three furnaces, each of which has a capacity of 235 tons a day and which are to be increased to a capacity of 385 tons a day. A 600-ton mixer is to be installed in the steel plant, together with considerable electric machinery and equipment for an electrical repair shop. The specifications also include blowing engines and a water purifying plant.

Victor Beutner, a prominent engineer of Pittsburgh, Pa., under whose supervision manufacturing plants aggregating in value \$40,000,000 have been constructed, has several contracts on hand for Portland cement plants, for the equipment of which a large quantity of machinery will be required. One of the recent contracts secured is that for the construction of a 3600-bbl. plant for the Lumberman's Portland Cement Company, whose offices are in the R. A. Long Building, Kansas City, Mo. This company, which is composed of prominent lumbermen of the Middle West, owns extensive lands at Carlyle, 5 miles north of Iola on the Atchison, Topeka & Santa Fé Railroad, the lime rock and shale deposits on which are identical with those used by the Iola and Kansas Portland cement companies. It owns extensive natural gas territory and natural gas will be used for fuel. The plant will contain five 8 x 125 ft. rotary kilns operated under the dry process. The type of grinding machinery to be used will not be determined until a thorough trial has been given the Kent mill and air separator installation in the Altoona Portland Cement Company's plant, for which Victor Beutner is also engineer. The plant of this latter company is about finished and will be shortly placed in operation. This plant is of 2500 bbl. capacity, and its complete construction and equipment in six months is believed to be a record. Mr. Beutner has also plans for a 3600-bbl. plant for the Union Portland Cement Company, which owns large mineral deposits and gas rights at Gas, Allen County, Kan. It is expected that ground will be broken for the Lumberman's Portland Cement Company within the next 30 days, and for that of the Union Portland Cement Company early next spring.

Contracts have been let for the steel work and construction of the new plant to be erected by the Heine Safety Boiler Company, St. Louis, Mo., and which has been previously referred to in these columns. This plant will necessitate the installation of a large number of additional machine tools, which, with the power plant equipment, have not yet been purchased.

E. D. & A. F. Cronk, 9 Liberty street, Utica, N. Y., will purchase a 3-ton hand power traveling crane, with 100 ft. of track and two switches, for the new machine shop they are to erect. They will be ready for bids in about three months for one 18 in. by 6 ft. lathe, one medium size shaper and one 24-in. boring mill.

There have been some inquiries in the market of late from the Public Service Corporation of New Jersey, Newark, N. J., made through J. T. Whittlesey, chief engineer of the company. The inquiries are chiefly for small lots of equipment to be added to the company's various shops.

The Standard Water Meter Company, Flatbush, Brooklyn, N. Y., has reorganized, with a paid in capital stock of \$100,000, and intends to increase largely its production by the installation of additional machinery. The company has purchased considerable new machinery the past week.

The Standard Oil Company has been placing orders for material for an addition to its Pratt Works at Long Island City. It is understood that all of the power equipment has been ordered.

Bids will be opened at the office of the Department of Public Charities, foot of East Twenty-sixth street, New York, October 26, for supplying equipment for a combined steam and formaldehyde disinfecting system for the new municipal lodging house on Twenty-fifth street, near First avenue, and the equipment will include the usual chambers and retorts. Separate bids will be taken on vacuum air pumps, motors, separators, air filters, &c.

Business Changes.

The Spooner-Matthewson Company, 90 West street, New York, has acquired the agency of the Waterbury Farrel

Foundry & Machine Company, Waterbury, Conn., which has been represented in New York by Ernest T. Matthewson, who is now a member of the first named concern.

Cleveland Machinery Market.

CLEVELAND, OHIO, October 13, 1908.

The past week has been a very quiet one with the local machine tool dealers. No orders of any size were taken and no large inquiries developed. The falling off in sales as compared with the few previous weeks is due largely to the fact that practically no further orders have come from the automobile builders who have been the life of the market for the past six weeks or more. The political campaign is having considerable effect on the machinery houses. Manufacturers, as a rule, are holding off until the result of the election is known before placing their orders. Buying during the week has been limited mostly to single tools. Tool builders whose recent improvement in orders has been due to the automobile trade are similarly affected and report fewer orders, while builders of machinery not used in making automobiles report conditions about the same as they have been during the past month or so. Nearly all the automobile makers have finished their buying for the season and not much business is expected from this source during the next few months.

While more activity is looked for after election, the majority of the dealers and builders are not expecting a great deal of improvement in the demand for machine tools before the first of the year. Tool manufacturers, however, are confident that better times will soon be here, and the majority of them are building tools for stock. The demand for second-hand tools continues fairly good, but the supply of good second-hand tools is scarce.

Builders of heavy handling machinery report some improvement in inquiries. There is a better demand for locomotive cranes, orders coming almost entirely from industrial plants. Practically no inquiries are coming from railroads for heavy machinery or locomotive cranes. Makers of heavy forgings report business very light owing to the absence of orders for railroad work and from shipyards. Inquiries for steel castings are better, but competition is resulting in the quoting of very low prices. The general foundry situation remains about stationary, the majority of the jobbing foundries running about one-half of their capacity. Orders are mostly for small lots of castings for immediate needs.

Outside of machinery lines the general situation with manufacturers continues to improve in a majority of industries.

The fifth annual "acquaintance excursion" of the Cleveland Chamber of Commerce was held on October 7. About 350 business men took part in the trip to Newburg, where they visited the plants of the American Steel & Wire Company and inspected the territory along the Upper Cuyahoga River, which is expected to develop into an important manufacturing district. The plants of the American Steel & Wire Company through which the visitors were shown by officials of the company were the Newburg Steel Works, the Central Furnaces and the new Cuyahoga plant, which is nearing completion and will be ready for operation in a few weeks.

The Cleveland Punch & Shear Works Company has recently received an order from the Western Steel Car Company, Chicago, for considerable machinery equipment for that company's new shop. The order includes two large multiple punches, each weighing over 100,000 lb., and a number of horizontal and vertical punches. The company has also received an order for several punches and shears for the Albany shops of the New York Central Railroad.

The Fitzsimons Company, Cleveland, has been incorporated with a capitalization of \$250,000 to manufacture shafting. Thomas G. Fitzsimons, who has been engaged in the manufacture of shafting for several years under the name of Fitzsimons & Co. and others are the incorporators.

The Akron Heater Company, Akron, Ohio, has been incorporated with a capital stock of \$5000 by Will C. Scott and others to manufacture heaters, radiators and stoves.

Bids for a double drum cylinder Corliss hoisting engine and for four 150-hp. marine boilers have been received by John W. Seaver, engineer, for the ore property that is to be opened up by the Tod-Stambaugh Company, Cleveland, at Hibbing, Minn. It is expected that specifications will be prepared and bids received soon for the other machinery equipment for the mine.

The Western office of the Waterbury Farrel Foundry & Machine Company, 1012 Williamson Building, Cleveland, reports that the orders taken in that office during the third quarter of the year were more than double those received during the first six months. Among recent orders taken by this company was one from Theodore Kundtz, Cleveland, for considerable special machinery for the complete equipment of a shop for the manufacture of general hardware used in making sewing machine cabinets. This company has also

received an order from the Park Drop Forge Company, Cleveland, for two hammers and one press for additional equipment for its forge plant. The order for the hammers was placed a year ago, but was cancelled during the period of depression. The Waterbury Company has also taken an order for two large bolt machines for shipment to the Pacific Coast.

Chicago Machinery Market.

CHICAGO, ILL., October 13, 1908.

Business in machinery shows no distinct improvement, and the demand continues irregular and intermittent in all lines. October has not opened as auspiciously with the machine tool trade as the movement in the last two weeks of September seemed to promise. A little spurt in that period brought out an increased number of small orders, and inspired hopes that it might prove the beginning of much desired permanent betterment for which all are watching. Last week's transactions included only a moderate lot of small orders, which, as a rule, comprised one or two tools each, there being few sales covering a larger assortment of equipment. The most important sale reported was one amounting to about \$4000 made by a Canal street dealer, which represented the requirements of a manufacturing plant. Since the appearance of the recent list of tools for the St. Paul Railroad, which was mentioned in these columns a few weeks ago, and bids on which are now being considered, nothing of any consequence has come into the market from the railroads. Even the desultory orders from such sources are so scarce as to be almost a negligible factor. It is recognized, however, that on every hand there is a strong inclination on the part of industrial interests generally to hold plans in abeyance until next month, at least, and for this reason developments of pronounced interest are not looked for in the meantime.

Some of the larger producers of prime movers in heavy motive power equipment are fairly busy on orders from new steel mills and furnaces, and other strongly financed industries, which were in position to carry forward projected plans in face of adverse financial conditions. While most of the heavy contracts of this kind were placed months ago, they have furnished work at a critical time and have helped to fill shop capacities that must otherwise have been idle. A conspicuous example in point is the new steel plant of the Indiana Steel Company at Gary, Ind., in which a large amount of the machinery equipment has been installed; much more will, however, be required before it is completed.

Forecasts of new business for the immediate future cannot, of course, be safely predicted upon expectations of a demand arising from similar undertakings of like magnitude, but a general extension of activities, such as is hoped will soon develop, will more widely distribute the benefits of new machinery requirements.

All of the switchboard apparatus for the new mills of the Indiana Steel Company at Gary, Ind., is being furnished by the Western Electric Company, Chicago. Installations already completed amount to \$150,000, and the execution of the entire contract will approximately double this sum. Some departments of the Western Electric works at Hawthorne are running practically full and the plant as a whole is a little better occupied than it has been for some months. Work on the new additions, which include three large buildings, is being carried steadily forward. The steel work of one structure is now nearly in completion and the others are under way.

The National Wire Cloth Company, Niles, Mich., has secured a new factory site upon which it has decided to erect a new plant. The main building will be of concrete and brick construction, 120 by 300 ft., with saw tooth roof, in addition to which there will be auxiliary buildings for the power house, warehouse and other uses. Motive power for the plant will be furnished either by a gas producer plant or by electrical current supplied from an established central station. This question is now under consideration and the company is investigating various types of gas producers designed for such service. Individual motor drives will be arranged for the operation of the machinery as far as possible, and considerable equipment of this and other kinds will be required to bring the plant up to the modern standard contemplated in the plans. In its arrangement the new plant will be designed to house the National Cable & Mfg. Company, an organization closely allied to the National Wire Cloth Company, which manufactures cables for lightning rods and other conductors of electric current.

The Armstrong-Blum Mfg. Company, Chicago, has designed and will soon have ready for the market a new tool in the form of a tool post grinder fitted for attachment to lathes and planers. This tool is arranged for adjustment to lathes or planers of any kind or size, and is driven from the cone on a lathe over a drum pulley supported by a frame attached to the machine. When used on a planer the drive is taken from a separate pulley on the countershaft. Vari-

able speeds are supplied by the cones when operated as a lathe attachment, and the lathe may be used for other work without removing the grinder frame. It is designed especially for service in general machine shops for increasing the range of work practicable with standard equipment. The company is also preparing patterns for, and soon will be able to furnish, a larger size of its Marvel hack saw. The new pattern will accommodate blades from 14 to 17 in., and will have capacity for cutting 6 x 6 in. bars. It will be ready for the market in about two months.

The E. L. Essley Machinery Company, Chicago, has secured the exclusive agency in Chicago territory for the 20-in. upright drill made by the Barnes Drill Company, Rockford, Ill. This tool was described in *The Iron Age* of April 30, 1908. The company has also been appointed Chicago agent for the improved automatic high speed hack saw made by the Racine Gas Engine Company, Racine Junction, Wis.

Bids will be received until November 2 for machinery equipment required for the new City Hall, Chicago, on which the preliminary work of construction is now in progress. The machinery embraced in specifications on file at the office of Holabird & Roche, architects, Monadnock Building, Chicago, includes boilers, engines, pumps, elevators, refrigerating apparatus, generators, dynamos, and all the auxiliary appliances necessary for a complete light, heat and power station. Specifications call for six boilers in all, five of which will be of the water tube type, and one of horizontal tubular type with Dutch oven; the water tube boilers will be equipped with mechanical stokers. The engines will be either full Corliss releasing gear type or semi-Corliss non-releasing gear, four valve type, all for direct connected service; three of them being horizontal cross compound and one horizontal single cylinder; all are required for direct connected service with an aggregate of 1575 hp. The elevator service will consist of 14 main elevators either of hydraulic or electric type, and four direct lift plunger basement hoists. The generator equipment will include one 400 kw., two 250 kw. and one 150 kw. direct connected units. Suitable pumps to operate the system are included in the list, together with an adequate motor driven coal and ash conveyor with weighing hopper. John J. Hanberg is the Commissioner of Public Works.

Two cupolas of notable size have recently been furnished by the Whiting Foundry Equipment Company, Harvey, Ill., to the Standard Cast Iron Pipe & Foundry Company, Bristol, Pa. These cupolas are of the standard No. 12 type made by the company, and have a capacity of from 30 to 35 tons per hour. The shells are 108 in. in diameter and are encircled with wind boxes 150 in., with 10½ in. linings. These are fitted with two rows of tuyeres, there being eight in each row.

The Board of Public Works of Milwaukee has awarded the contract for a new 12,000,000 gal. pump for the North Point Water Works to the Allis-Chalmers Company, after having made a careful investigation of the various bids submitted. The company agrees to have the pump installed and ready for use within nine months. The contract price is \$87,000.

New England Machinery Market.

WORCESTER, MASS., October 13, 1908.

A decidedly more cheerful tone pervades the machine tool trade. The Boston dealers report a week of better business. The volume of orders booked was larger, though one reason for this was the receipt of final ratification of the awards for the Watertown Arsenal list, and of several other lots of some size. The universal report of the dealers is that inquiries look more promising of actual business. Yet, while there is a growing tendency to discount the national election, a hesitation is still noticeable in the placing of machinery contracts, the intervening time being so short that to entirely overlook this element of the market is hardly to be expected.

Among the machine tool builders a somewhat better condition exists, though the change is slight, as might be expected. In a few cases a recent succession of orders which gave decided encouragement has stopped for the time being. But to offset this in considering the trade as a whole other machinery builders are booking more business than they did. The manufacturers speak of their prospects with a good deal greater confidence.

Few of the New England machine tool establishments will be without a representative at the meeting of the National Machine Tool Builders' Association at New York next week. There seems to be an unanimous desire to meet with contemporaries from other parts of the country and discuss matters, especially the outlook as it appears in the various sections. Few questions of importance will be discussed at the meeting, so far as the members from New England have heard. There will be the usual interchange of views as to prices, but the outcome is not likely to be a change excepting perhaps in a few minor instances. The planer builders are

anxious to place certain appurtenances of their lines on a more equitable basis as to prices, including such items as motor drive. It has been the experience of this branch of the business, as it was with the lathe builders before they accomplished the readjustment, that they are selling what may be called accessories at a loss or at the best at no profit. The interchange of experiences at the meetings of the lathe section resulted in very material advantage to the manufacturers. The planer builders have gone part way in this matter, but they still have considerable to accomplish before they are in a position to get a fair profit on everything that they sell.

The National Supply and Machinery Dealers' Association is agitating the matter of adherence to resale prices. It is claimed that not all of the dealers are carrying out this principle. A specific case is that of chucks, their manufacturers believing that violations of the resale price agreement between them and their customers are more numerous than they like. The most important individual instance of this sort proved to be a mistake on the part of the dealer, but it is said that in some sections of the country the practice has become somewhat common. The cause of this is the action of purchasing departments in crowding the dealers for lower prices. In New England concessions on the part of supply dealers appear to have been rare. Very few instances occur when the charge is made against a competitor, and cutting prices usually gets to the ears of the trade sooner or later and becomes a subject of comment. In this connection a letter written by a dealer in answer to the inquiry of a manufacturer regarding business conditions gives an interesting sidelight on the experiences of the supply trade. The letter states: "The sales department of many large manufacturing concerns are endeavoring, in every way possible, to induce jobbers to replenish their stocks. The purchasing departments of some of these corporations do not give the jobbers much encouragement. If all of them would let loose the requisitions they are now holding up, distributing them among jobbers like ourselves, we do not think it would require much persuasion on the part of their sales departments to get the jobbers to stock up liberally. The sales departments of most manufacturing concerns tell us that business is going to revive and to send in our orders. When our salesmen call on their purchasing departments they tell us that they are buying only what they actually need and that their present requirements are limited."

It should be stated that the supply trade has begun to pick up, and there are signs of a return to normal conditions of buying on the part of its customers. Orders received appear to indicate the beginning of the end of the hand to mouth practice which has been followed for the last year.

The Becker Milling Machine Company, Hyde Park, Mass., which recently took over the business of the Becker-Brainard Milling Machine Company, has organized, with Eugene N. Foss as president, John Becker, treasurer and general manager, and Elmer P. Howe, secretary.

The Chase Rolling Mill Company, Waterbury, Conn., brass manufacturer, will build a one-story addition, 60 x 220 ft., of brick and steel. The new building will take care of a natural growth of the business, providing an extension of rolling mill facilities on ordinary lines of product.

The Foster-Richardson Company, Westboro, Mass., manufacturer of metal bedsteads, will require no new equipment for the new section of its plant which will replace that recently destroyed by fire. The building will be 30 x 65 ft., two stories.

Alvah B. Way has resigned as secretary and treasurer of the new Peck & Way Mfg. Company, which will manufacture small springs at Forestville, Conn., a suburb of Bristol. Mr. Way was recently with the Wallace Barnes Company, Bristol.

The Simplex Mfg. Company, Granby, Conn., will move to Thompsonville, Conn., where it will occupy a building which will be fitted for the purpose. The company is in the market for metal shears for stripping ½-in. sheet stock, power presses, motors for group drive in operating machinery, ball bearing shaft hangers, gas forging and tempering furnaces, and heating apparatus for building.

William B. Boardman, receiver of the Mechanical Toy Movement Company, Bridgeport, Conn., manufacturer of talking machines, states that it is very unlikely that the company will ever resume business. The factory equipment and unfinished parts of the product will be sold.

The Schleicher & Sons Piano Company, Stamford, Conn., requests a denial of the report widely published in the daily press that it plans to erect a large factory building. The present plant is ample for the company's needs.

The Prentiss Tool & Supply Company has taken the exclusive agency for the grinding machines of the Heald Machine Company, Worcester, Mass., for New York and New England, including the branch offices at Syracuse and Buffalo.

The Heald Machine Company, Worcester, Mass., has brought out a new ring grinder which differs from the previous type in that it is equipped with hand instead of power feed. The particular purpose in establishing the new line

is the advantage of the hand feed in grinding narrow surfaces.

The brass industry of Waterbury, Conn., and the rest of the Naugatuck Valley shows a very marked improvement. Practically all of the works are back to full running time, and the forces of some of them, perhaps the majority, bring production close to the normal. Here are some of the answers to direct inquiry as to conditions:

Chase Rolling Mill Company: "Present conditions are not far from normal, and the outlook is much better than it was a while ago."

Waterbury Mfg. Company, brass goods: "Business has improved over earlier in the year. Trade has been fair this fall, say, two-thirds of a business for this company."

American Ring Company: "Business with us during the last six weeks has shown a decided improvement, which leads us to hope for a normal condition before the first of the year. For the past three weeks we have been running full time with a gradually increasing force."

Waterbury Clock Company: "Our business of the last three months has been very satisfactory, approximating our normal business."

American Pin Company: "We have one or two departments which were very much behind, and are running overtime for a week or two. We are approaching full business."

Oakville Company, wire and metal goods: "The volume of business in what we call our 'cutting-up shops' has increased and is still increasing. Some departments have felt the revival to a marked degree and are running to their full capacity. Others are still doing but 60 to 75 per cent. of their normal business. Should the present rate of increase continue, say two months longer, it would give business equal to that before the depression."

Noera Mfg. Company, brass specialties: "Business has improved remarkably since September 1. In fact, we have quite a number of orders for goods to be manufactured for spring delivery; this notwithstanding the fact that some of the jobbers stipulate that these goods are to be shipped only in event of Taft's election."

Berbecker & Rowland Mfg. Company, furniture hardware: "We find the condition of business somewhat better and are running our works full time."

Cincinnati Machinery Market.

CINCINNATI, OHIO, October 13, 1908.

Drifting along with a careful and tender regard for all signals of a hopeful nature the machine tool builders of this section, while not yet as a class anywhere near normal in hours and forces, are making ready for what is expected to be one of the most substantial buying movements ever experienced in the trade. Signs pointing to such a consummation are, in the minds of the larger manufacturers, plentiful. The rapid absorption of idle car accumulations, the wonderful growth of automobile industry everywhere, and evidences in correspondence that substantial specifications are held up all over the country waiting the result of the election, and ready to be released the minute the results of that election are known and satisfactory, develop these reflections. The war talk also suggests some returns in the tool line. Large manufacturers in this district have profited many thousands of dollars through various wars abroad.

One large manufacturer in this district has compiled a list of specifications for equipment amounting to \$12,000, and this, he says, will be placed if the election results as he anticipates and desires. Another here has one for \$5000, and others announce themselves to the same effect. If this same plan is carried out in other trade centers the results are obvious.

The largest local machinery sales concern reports business showing a slight betterment, with prospects improving daily. This concern has several important lists of specifications on which it is figuring. Late inquiries indicate a growing interest in standard lines of milling machines and special machinery. Inquiries for second-hand machinery do not show material gain, at least not in a commensurate ratio with those for new tools.

Acting Chief Engineer of the Water Works Commission Benzenberg has completed his computations on the first list of tool specifications announced, and the awards have just been made. These show that competition was close and bidders were widely distributed. The estimate on the list of 12 items comprising 22 tools was \$13,000. The successful bids foot up \$10,159. Practically the entire list was taken by Cincinnati manufacturers, although a few items were negotiated by selling agents in other cities and territory. For instance, the 36-in. engine lathe specified for the Main Station in item No. 1 was a Lodge & Shipley, but furnished by the Motch & Merryweather Machinery Company, Cleveland. This bid was \$2427. Item 2, an 18-in. engine lathe, went to the American Tool Works Company, Cincinnati, at its bid of \$1102. Items 3, 4, 5, 6, 9 and 12, 16-in. engine lathe, 14-in. engine lathe, 30-in. metal planer, two 16-in. shapers,

18-in. upright drill and an emery wheel floor stand, went to the E. A. Kinsey Company, Cincinnati. The 16 and 14 in. engine lathes, items 3 and 4, respectively, went at \$888 and \$714, the products of the R. K. Le Blond Machine Tool Company, Cincinnati; item 5, one 30-in. metal planer, will be furnished by the G. A. Gray Company, Cincinnati, the price, \$1350; item 6, two 16-in. shapers, are built by the Queen City Machine Tool Company, the price, \$1150; item 9, one 18-in. upright drill, a product of the Cincinnati Machine Tool Company, the price, \$246. Item 12, for one emery wheel floor stand, built by the Brickford Safety Emery Wheel Company, the price, \$98.70. Item 7, two 48-in. radial drills, was secured by the Fosdick Machine Tool Company, Cincinnati, at \$1864. Item 10, three 20-in. wet tool grinders, will be furnished by Manning, Maxwell & Moore, the price, \$425. Item 8, calling for three 20-in. upright drills, amounts to \$799.50, and went to the Queen City Supply Company. The tools will be driven by belt motor drives built by the Cincinnati Machine Tool Company.

At the plant of the Lodge & Shipley Machine Tool Company evidences multiply of an aggressive policy and expectations of an improved market. Workmen are just finishing the laying of a heavy oak floor in the new 90 x 200 ft. concrete addition to the main building, which now measures 650 ft. in length, and is one of the finest and best lighted shops in the district. The new addition will be known as the erecting shop.

At the various foundries evidences accumulate of increased melts, and a few workmen are added from time to time. A number of foundrymen also have made, and are making, additions and improvements. At the new plant of the John J. Bruce Foundry Company, on Colerain avenue, the new concrete pattern building has been completed, and the details of handling and storing the patterns worked out. The new building is a splendid example of this type of fire-proof construction, 40 x 50 ft. in size, and admirably adapted to the purpose. The company is running a heat daily of from 12 to 15 tons each. It is the intention to build an addition soon in which to locate the planers and other tools.

The Steptoe Shaper Company has sold a 16-in. single gear shaper for shipment to Denver, Colo.; 14-in. to New York, and another, a 16-in. single gear, to go to Buena Ventura, South America. President Broxterman notes that September closed admirably with his concern and is quite optimistic on future possibilities.

A letter from Secretary-Treasurer C. E. Drury of the Eureka Castings & Machine Company, a newly incorporated concern at Dayton, Ohio, verifies published statements of the taking over by that concern of the business of the Eureka Foundry Company. The new company is capitalized at \$25,000 and the officers are: J. E. Zimmerman, president and general manager; W. H. O. Ryan, vice-president, and C. E. Drury, secretary-treasurer. The company will make a specialty of high grade gray iron castings.

Isaac Phelps, E. C. Phelps, and Mrs. Blanche Scarlett Phelps have incorporated in Covington, Ky., the Phelps Iron & Steel Company. The capital is fixed nominally at \$4000.

Tool and machinery manufacturers in this territory generally are interested in the expected report in a few days from the railroads which will define the question of consolidation of carload shipments at car rates. It was thought to have been settled to the satisfaction and in the interests of the manufacturers at one time recently, but was held up again, and is now in the hands of the Receivers' and Shippers' Association.

President Fred. A. Geier of the Cincinnati Milling Machine Company is leaving Europe, and is expected in New York a day or so before the convention of the National Tool Builders' Association, which will meet October 20 and 21, at the Hotel Imperial, and which he will attend. The heads of practically all the larger establishments here will attend this meeting, which is expected to be a more than ordinarily interesting one. It is quite certain that the price question will be a leading topic at the meeting.

Philadelphia Machinery Market.

PHILADELPHIA, PA., October 13, 1908.

The celebration of the 225th anniversary of the founding of the city of Philadelphia, which lasted throughout the week, resulted in a virtual suspension of business in many directions. The members of the Local Supply & Machinery Association decided to close their business places every afternoon except Saturday, and the same policy was followed by a number of manufacturers. Others closed every alternate day, so that it can readily be seen that business was largely suspended. Such trade as developed was mostly from out of town sources. One concern, whose plant was recently destroyed by fire, placed orders for several thousand dollars' worth of new equipment, and is about ready, if it has not already done so, to place orders for even a larger amount. Inquiries have not been plentiful, the disposition of the trade

at large continuing along lines of extreme conservatism. Some few orders have been placed, subject to countermand should the coming election result unfavorably to the buyers' views, but in a majority of instances prospective buyers refuse to make any purchases until after the result of the election is known, except in cases of urgent need, where equipment is required to carry out work for which orders have already been placed. Few are willing to hazard an opinion as to the return of normal conditions. Some who have booked a fair amount of business, which in most cases is confined to equipment of a special character, rather than for that of the so-called standard tools, talk very optimistically, but even then their views are based on a favorable election.

The railroads still maintain a waiting policy, and nothing of any moment is expected to develop from that direction during the current month.

Manufacturers as a rule make no important gains in production. Here and there a maker of special tools reports increased activity, in one or two instances running up to 75 per cent. of normal capacity, but these cases are exceptional, in the majority of instances 50 to 60 per cent. representing the average, while quite a large number have not yet reached the 50 per cent. mark. The situation on the whole does not show much betterment as far as actual work is concerned; some improvement, however, is expected during the closing months of the year. Quite a fair lot of equipment for the Government will probably come out during that time, but it is now pretty generally believed that it will be well into next year before we will be able to report conditions as having returned to the normal.

Foreign demand still drags, no important inquiries having developed, and such business as does come out is usually small and of a special character.

The second-hand machinery market has reflected strongly the general condition of the trade. The business transacted has been along narrow lines, interrupted to a considerable extent by local conditions.

The demand for castings, both iron and steel, continues irregular. In some instances a betterment is to be noted, but in others the orders received are individually unimportant. Foundries as a rule have been melting more material, but the gains made have not been in the direction of machinery castings.

The Philadelphia Rapid Transit Company is having plans prepared under the direction of Chief Engineer W. S. Twining for an addition to its car barn at Twenty-sixth street and Allegheny avenue. The new building will be of reinforced concrete, 80 x 500 ft.

The Harlan & Hollingsworth Company, Wilmington, Del., is understood to have about completed plans for a new building to be used for the manufacture of steel cars, according to a scheme of expansion outlined some time ago. Details are not available, but it is believed that the building will be of structural steel and brick construction.

The Eynon & Evans Mfg. Company reports business to have increased steadily in July, August and September, the last month showing the more consistent gain. Orders have been small individually, but in good number and some departments of the plant are now fairly well occupied. There has been a decided improvement in the demand for steam jet blowers; some good business pending in this department, and the outlook on the whole is considered encouraging.

The Roysford Foundry & Machine Company, Roysford, Pa., reports business in the machinery line in August and September to have shown a considerable improvement over the preceding two months. The plant is working about two-thirds time, with about two-thirds its regular force, and has booked quite a few orders recently for punch and shear machinery.

The Link Belt Company, Nicetown, reports a continued run of small orders, with occasional bookings of large propositions, including, among others, a large monobar chain conveyor for coal mining purposes, and three conveyors and a steel tank equipment for another coal concern, both in this State. Orders for some extensive belt conveyors for phosphate handling have been received from the South, while special conveyors for wood refuse are to be furnished New York customers, and a special ammunition carrier chain has been ordered for New England delivery.

The R. S. Newbold & Son Company, Norristown, Pa., has recently booked some considerable orders for blast furnace equipment, including a large order for gas stoves, mains and piping for a furnace in the central part of the State, also a good order for gas mains, down comers, valves, &c., for a nearby furnace, and two large scrubbers for a gas plant in the Middle West. These orders will keep the boiler shop department of this company's plant busy for the balance of the year, as well as giving considerable work to the foundry and machine shop departments. About 75 per cent. of the normal production is now being made by this concern.

The Hilles & Jones Company, Wilmington, Del., advises us that new business booked in September showed some little increase over that of the previous month. More inquiries

have come out, and the situation is believed to be better. Among recent contracts secured the following are to be noted: Boiler shop equipment, including punching and shearing machines, plate planers, &c., for the new boiler shops of the Bath Iron Works, Bath, Maine, to replace that destroyed by fire; sundry punches, shears and bending rolls of large size for several of the large railroads, including the New York Central and the Delaware, Lackawanna & Western Railway, from the Maryland Steel Company's Marine Department, Sparrows Point, Md., a heavy plate edge planing machine to plane 36 ft. at one setting. A notable shipment by the Hilles & Jones Company recently included a boiler shop outfit, including punching and shearing machines, plate bending rolls and flanging clamps for export to Cuba.

Government Purchases.

WASHINGTON, D. C., October 13, 1908.

The Isthmian Canal Commission will receive bids until November 2, Circular No. 473, for pneumatic hoists, pipe threading machine, back geared shaper, motor driven grinder, electric drill, band saws, planer, jacks and other supplies.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until November 14 for a coal and ash handling plant for the power plant at the Charleston Navy Yard.

The time for opening bids for four beam and four chamber cranes for the Isthmian Canal Commission, Circular No. 407, has again been extended from October 17 to October 27.

The following bids were opened October 5 for supplies for the Isthmian Canal Commission, Circular No. 466:

Class 16.—One duplex horizontal feed pump—Bidder 41, Fairbanks, Morse & Co., Chicago, Ill., \$88; 42, Fox Bros. & Co., New York, \$74.49; 46, Gardner Governor Company, Quincy, Ill., \$98; 78, Manning, Maxwell & Moore, New York, \$82.65; 81, Meyer Brothers, New York, \$125; 86, Motley, Green & Co., New York, \$90; 87, National Electrical Supply Company, Washington, D. C., \$115; 109, H. A. Rogers Company, New York, \$98.75; 142, Henry R. Worthington, New York, \$70.

Class 17.—Two rotary force pumps—Bidder 42, Fox Bros. & Co., New York, \$16.78; 51, Gonds Mfg. Company, New York, \$26; 77, Manhattan Supply Company, New York, \$24, \$34 and \$40; 85, Montgomery & Co., New York, \$17, \$20, \$24, \$66.60, \$75.60 and \$85.40; 86, Motley, Green & Co., New York, \$20; 87, National Electrical Supply Company, New York, \$20; 108, J. B. Roach, Brooklyn, N. Y., \$18.54; 109, H. A. Rogers Company, New York, \$18.98; 141, F. T. Witte Hardware Company, New York, \$17.

The following bids were opened October 6 for machinery for the navy yards:

Class 21.—Twelve pneumatic hammers—Bidder 43, Chicago Pneumatic Tool Company, New York, \$258; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$300; 45, Columbus Pneumatic Tool Company, Columbus, Ohio, \$180; 64, Dayton Pneumatic Tool Company, Dayton, Ohio, \$240; 96, Helwig Mfg. Company, St. Paul, Minn., \$220; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$342; 131, Manhattan Supply Company, New York, \$480; 132, Charles W. Mavedell, San Francisco, Cal., \$513; 153, George Oldham & Sons Company, Frankford, Pa., \$270; 156, Pittsburgh Pneumatic Company, Canton, Ohio, \$480; 156, Standard Railway Equipment Company, St. Louis, Mo., \$420; 23, Ingersoll-Rand Company, New York, \$307.80.

Class 22.—Eleven pneumatic drills and three end spindle pneumatic drills—Bidder 43, Chicago Pneumatic Tool Company, New York, \$975; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$835; 97, Independent Tool Company, Chicago, Ill., \$917; 131, Manhattan Supply Company, New York, \$1257; 132, Charles W. Mavedell, San Francisco, Cal., \$1006.80; 233, Ingersoll-Rand Company, New York, \$1142.33.

Class 61.—Twenty-five nonreversible pneumatic drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, \$965.85; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$1347.20; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$950.25; 233, Ingersoll-Rand Company, New York, \$1211.30.

Class 62.—Twenty-five nonreversible drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, \$1072.50; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$1423.75; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$1026.30; 233, Ingersoll-Rand Company, New York, \$1955.31 and \$1845.36.

Class 63.—Twenty-five pneumatic drilling and reaming machines—Bidder 43, Chicago Pneumatic Tool Company, New York, \$1200.50; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$1628.75; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$1105.20; 233, Ingersoll-Rand Company, New York, \$1960.04 and \$1845.45.

Class 64.—Twelve pneumatic drilling and reaming machines—Bidder 43, Chicago Pneumatic Tool Company, New York, \$645; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$846.62; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$606.20; 233, Ingersoll-Rand Company, New York, \$1003.45 and \$1075.25.

Class 65.—Forty pneumatic hammers for chipping and caulking—Bidder 43, Chicago Pneumatic Tool Company, New York, \$839.50; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$1396; 57, Dayton Pneumatic Tool Company, Dayton, Ohio, \$817.36; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$809.50; 153, George Oldham & Sons Company, Frankford, Pa., \$1508.45; 156, Pittsburgh Pneumatic Company, Canton, Ohio, \$745.50; 233, Ingersoll-Rand Company, New York, \$1649.48 and \$1641.28.

Class 66.—Fifteen pneumatic riveting hammers—Bidder 43, Chicago Pneumatic Tool Company, New York, \$465.65; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$823.25; 57, Dayton Pneumatic Tool Company, Dayton, Ohio, \$451.38; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$394.80; 153, George Oldham & Sons Company, Frankford, Pa., \$587.10; 156, Pittsburgh Pneumatic Tool Company, Canton, Ohio,

\$444.17; 233, Ingersoll-Rand Company, New York, \$699.71 and \$699.33.

Class 67.—Eight pneumatic riveting hammers—Bidder 43, Chicago Pneumatic Tool Company, New York, \$255.30; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$455.80; 57, Dayton Pneumatic Tool Company, Dayton, Ohio, \$223.28; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$203.75; 153, George Oldham & Sons Company, Frankford, Pa., \$315.40; 156, Pittsburgh Pneumatic Company, Canton, Ohio, \$235.51; 186, Standard Railway Equipment Company, St. Louis, Mo., \$360; 233, Ingersoll-Rand Company, New York, \$338.90 and \$31.72.

Class 68.—Fifteen pneumatic holders-on—Bidder 43, Chicago Pneumatic Tool Company, New York, \$225; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$258; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$226.60; 186, Standard Railway Equipment Company, St. Louis, Mo., \$277.50.

Class 69.—Five pneumatic drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, \$432.30; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$461.25; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$309.25.

Class 70.—Five pneumatic drilling machines—Bidder 43, Chicago Pneumatic Tool Company, New York, \$432.30; 44, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$499.55; 97, Independent Pneumatic Tool Company, Chicago, Ill., \$334.95.

Class 194.—One electric hoist—Bidder 16, Alfred Box & Co., Philadelphia, Pa., \$200; 93, Hoisting Machinery Company, New York, \$313; 141, Niles-Bement-Ford Company, New York, \$740; 225, Yare & Towne Mfg. Company, New York, \$459.

The following bids were received at the Bureau of Yards and Docks, Navy Department, Washington, D. C., October 3, for four 1000 kw. and two 500 kw. turbo alternators for the navy yards:

General Electric Company, Schenectady, N. Y., \$119,900; Westinghouse Machine Company, Pittsburgh, Pa., \$89,995; Allis-Chalmers Company, Milwaukee, Wis., \$119,310.

Under bids opened August 10, Circular No. 456, for machinery for the Isthmian Canal Commission, the American Hoist & Derrick Company, St. Paul, Minn., has been awarded class 1, one locomotive crane, \$6958, and class 2, two derricks and accessories, \$1722.58.

The following awards have been made for machinery for the navy yards, bids for which were opened August 25:

Henshaw, Bulkley & Co., San Francisco, Cal., class 11, one back geared crane shaper, \$515.

Handian-Tuck Mfg. Company, St. Louis, Mo., class 12, one drill press, \$218.

Vulcan Iron Works, Wilkes-Barre, Pa., class 101, one double end saddle tank locomotive, \$5150.

Class 13, one engine lathe, has been canceled.

Tin Truth.

Under the above title a most interesting 40-page pamphlet has been published by the Follansbee Brothers Company, Pittsburgh, Pa. The purpose of this book, as stated, is to describe clearly and concisely the general conditions governing the manufacture of high grade tin plate, together with the processes, methods and raw materials employed in its making, so that those who read may learn what constitutes high grade plate, what is necessary to its manufacture and how to select it. The information given is set forth under a number of headings, covering the following subjects: The qualities of roofing tin plates; development of the base plate, 1720 to 1908; action of chemical elements in raw material; iron ore supply; making of pig iron; processes for making steel and iron; knobbling process; puddling process; Bessemer process; open hearth process; the Follansbee hammered open hearth process; the finished product.

It will be seen from the array of subjects that practically everything in connection with the manufacture of tin plate has been touched upon. The information given is historical, technical and scientific. The statements and matter set forth are taken from standard authorities which are named. The conclusion arrived at is that open hearth steel is the most suitable material from which to make high grade tin plate. The booklet is profusely illustrated, and will attract the attention of those who are not deeply interested in the technical details. These illustrations are all reproduced from photographs taken in the open hearth works and tin plate mills of the company.

Aeronautics is to be a leading subject at the annual meeting December 1 to 4 of the American Society of Mechanical Engineers in New York city. An exhaustive paper on this subject will be presented by Major George O. Squier, of the Signal Corps, U. S. A., and a popular lecture on the same subject will be given by Lieutenant Frank P. Lahm, also of the Signal Corps, which will be illustrated with lantern views and moving pictures of the recent trials of the Wright aeroplane at Fort Meyer.

Trade Publications.

General Machinery.—Drew Machinery Agency, Manchester, N. H. The 1908 stock list of the company. Quotes machinery in storage for immediate delivery, which includes a general line of metal and wood working machinery and special equipment, such as laundry machinery, blacksmith apparatus, stove and hoop machinery, &c.

Condensing Apparatus.—Alberger Condensing Company, 95 Liberty street, New York. Catalogue No. 9. Size 6 x 9 in.; pages 95. Reviewed in *The Iron Age*, October 1, 1908, but incorrectly referred to as Catalogue No. 8.

Twist Drills and Chucks.—Celfor Tool Company, 217 Railroad avenue, Chicago, Ill. Booklet, 21 pages. The Celfor drill, which is essentially a high speed twist drill, is shown and described here and some of its performances are related. The drill is made by twisting a flat bar of steel. It is claimed that the weight of the cutting portion is less than the weight of the cutting portion of a milled drill, and a special chuck is made by the company to hold it. The drill is adapted for extremely rapid work, and a 1 3/4-in. drill is shown in operation drilling forged connecting rods 8 in. thick, feeding 1 3/4 in. per minute.

Tube Expanders and Tube Cutters.—Gustav Wiedeke & Co., Dayton, Ohio. A combination calendar and price-list recently issued by this company shows several types of tube expanders and cutters made by the company, and contains descriptions and prices. The main illustration is a picture of the largest passenger engine in the world, in use on the Chicago & Alton Railroad.

Foundry Equipment.—Whiting Foundry Equipment Company, Harvey, Ill. Catalogues for binder. Size, 6 x 9 in. No. 49, superseding No. 26, deals with trucks and turntables, surface tracks, tramways, frogs, switches, &c.; No. 50, superseding No. 42, illustrates and describes the various types of the Whiting cupola and its accessories, and gives practical hints and general information on the subject; No. 51, superseding No. 40, pertains to the different types of air hoists, air receivers and hose trolleys; No. 52, superseding No. 27, is devoted to brass foundry equipment, such as crucible tongs, shanks, pick-up tongs, brass furnaces, small tumblers, &c.; No. 53, superseding No. 102, is descriptive of the Moyer overhead tramrail system for delivering metal to molding floors, for handling cores and for cleaning room service; No. 54, superseding No. 41, refers to spur geared, roller drive and friction geared tumblers, and exhaust systems, and No. 55, superseding No. 29, to power sand sifters.

Manganese Steel Castings.—American Brake Shoe & Foundry Company, 405 Western Union Building, Chicago, Ill. Leaflet. Enumerates and illustrates various castings of manganese steel manufactured for gold, silver, copper, lead, zinc, iron and coal mines, smelters and chemical works. The castings range in size from pinions and sprocket chains to heavy crusher, screen and dredge parts. High carbon specially treated steel castings, and vanadium, chrome, nickel and chrome nickel steel castings are also manufactured for mine and quarry work.

High Power Millers.—Cincinnati Milling Machine Company, Cincinnati, Ohio. Catalogue. Size 6 x 9 in.; pages 51. Illustrates an entirely new line of horizontal and vertical milling machines, which are built on the unit system, each group of mechanisms being assembled as a complete unit, and all units interchangeable between the horizontal and vertical machines. These machines are supplied with constant speed belt drive, right angle belt drive, constant speed motor drive, or variable speed motor drive. Change from one to the other is easily made by the owner. Among the new features of the machine are a locked tumbler, the elimination of torsional strains in the main driving shaft, a treadle arrangement to facilitate quick and easy speed changing, and a single plunger trip operating a trip clutch mounted on a shaft running ten times as fast as the feed screw. The vertical machines are similar to the horizontal ones except that the spindle is in a vertical position. It is unusually long, has its bearings both mounted in a single piece head casting, and this head casting or frame has long and wide bearings on the main frame of the machine. Each size of the vertical miller is intended to do as heavy work as the equivalent size of horizontal machine.

Drills and Cutters.—Baldwin Steel Company, 133 Reade street, New York City. Catalogue, 6 x 9 in.; 80 pages. Describes the drills made by this company, both straight and taper shank and special drills with oil tubes. It also describes and catalogues reamers and the Hudson patented reinforced stay bolt tap. In the line of cutters are such tools as plain milling cutters with inserted teeth, concave and convex cutters, as well as special forms for cutting gears, slots and angles.

Brass, Bronze and Aluminum Foundry Equipment.—The S. Obermayer Company, Cincinnati, Ohio. Catalogue. Second edition of a special catalogue of supplies and equipment for brass, bronze and aluminum foundries and special outfits for experimental purposes. Attention is also called to Partamol, which is a new compound for parting molds, and is claimed to be an excellent substitute for lycopodium. It is claimed that it acts as a perfect separator, and the cost is low.

HARDWARE

THE management of freight matters is both for the State and the individual encumbered with a mass of details that call for careful and even minute attention, but at the same time it has to do with general principles of very wide application. The manner in which transportation is the subject of legislation makes it indeed necessary for a thorough and well posted traffic man to be familiar with the laws which have been enacted and the legal principles which apply in this important field. In taking this broad outlook it should be remembered that commerce is the effort to overcome the inequalities of nature, and to promote the distribution to points near or remote of the material wealth and resources which nature has gathered in her various storehouses. The farmer in Texas or Argentina builds his house with Hammer and Nails which came from the great iron storehouse of the Lake Superior district; and from the same source comes the Wire to fence his fields and the implements to cultivate his soil and harvest his crops. In the same manner the golden harvests of the West, the cotton of the South, and the wealth stored in the water power of Niagara and the rivers of New England are distributed throughout the world through the instrumentality of commerce. The humblest toiler, who has never traveled ten miles from the place of his birth, obtains in exchange for his labor a cup of tea from the latest harvest of Cathay, sugar from Cuba or Hawaii, bread from Dakota, meat from the great "Corn Belt," and coal that ages ago was stored in the ground. Commerce knows no distinction between the peasant and the king, in her distribution of nature's bounty; demanding a fair exchange from all.

The railway, in the world of commerce, is an instrumentality for overcoming distance and the inequalities of nature. The farmer and the manufacturer find no greater barrier in shipping across the Alleghenies or the Rocky Mountains than they would encounter on the dead level of the Grand Prairie of Illinois, because the builders of railways have created a new geography in which mountains have been reduced to the level of the plain, making a highway in the desert. In a manner even more striking, the railway has overcome the barrier of distance, to such an extent that a box of Hardware can be shipped a thousand miles by rail at the same cost that it could be sent a few miles by horse and dray. The Illinois Hardware merchant who invented Barb Wire, and twisted the first strands with a grindstone while his wife turned the crank, could scarcely have distributed his product 100 miles by wagons, but through the instrumentality of the railway the benefit which his invention conferred upon the farmer has been distributed impartially through every State in the Union, and to every country of the world. The railway taps all the storehouses of nature and of human labor and invention, and distributes their wealth far and wide among the people. Not a little of the dignity of commercial life is connected with the recognition of the facilities which are within reach, and the breadth of the field which is thus opened, giving splendid opportunities for enterprise and skill.

The Interstate Commerce law, with various amendments enacted by Congress, is an effort on the part of the people to assist by law the equal distribution of the products of nature and industry. The chief purpose of

the law is to promote equality in the use of the railroads, giving to the smallest shipper the same service that can be obtained by the greatest, on equal terms as to cost. This ideal has actually been realized, as nearly as any ideal can be worked out in material affairs. The smallest shipper of iron or steel pays the same rates for corresponding shipments as the United States Steel Corporation, which ships each year several millions of carloads of materials and products. An incident in the recent history of this great corporation illustrates forcibly the recognition that is given to the ideal that all shippers should stand on an equal basis. Every employee who handles the traffic affairs of the various enterprises controlled by that corporation received not long since a letter from Judge Gary, its executive head, giving the most emphatic instructions that the law must be obeyed in letter and spirit in all their business affairs with the railroads. Twenty-five years ago a letter of this character would have provoked a smile in the business world, and might have cost the writer his high position unless he could have explained to the directors that it was a mere piece of business strategy; but now it is accepted with general approval and there is no shadow of suspicion that it is not intended in good faith.

Condition of Trade.

The steady consumption of goods throughout the country, a gradual increase in the movement of merchandise in the various branches of trade, and the more general employment of factory hands are features of the market which indicate the progress which is being made toward normal conditions. The last few weeks, while not bringing a heavy demand for Hardware and Metal products, have certainly witnessed an improvement in the general situation. Manufacturers are free from the pressure under which their works have been run for several years, and are permitted to enjoy the satisfaction which is connected with being able to accommodate their customers by prompt shipments. The moderate quantity in which goods are being bought, both by the large and the smaller trade, involves increased labor in the handling of the business. As there is a near approach to election day more attention seems to be given to political matters, and trade feels to some extent the distracting influence of this diverting of thought and energy. Together with this, there is something of a disposition to await the result of the election and be content for the present to take care of business which comes along in regular course. In the matter of collections there is a good deal of unevenness in the experience of the trade. Money in general continues abundant, but some merchants and manufacturers find collections slow and rather unsatisfactory. With the movement of the crops conditions in the agricultural sections are certainly easier and remittances are giving no ground for complaint.

Chicago.

It is hardly to be expected that the spirit of conservatism which has dominated commercial transactions for months past should experience any radical change just now. It is well, perhaps, for the business interests of the country that it should not; for it is manifestly a safer and better policy to run at a cautious speed until the signal lights show clear ahead. The wisdom of this course seems to commend itself to buyers of Hardware, as

well as other lines, for whatever improvement there is in the movement of goods is to a very great extent the result of increased consumption of the lines affected. The demand for seasonable goods continues fairly active, and because of a simultaneous rush of orders for certain articles required to supply the needs of winter trade, jobbers are under the necessity of shipping some of them short. While, as a whole, there is no marked increase in the general volume of business, the trend is steadily toward improvement. However, it should be observed that the business of many of the Western jobbers has suffered comparatively little diminution, so that, even now, the situation for them is not such as to avenge serious complaint. Nor, indeed, is any heard, save as it is expressed, in a desire for full restoration of confidence and the re-establishment of normal conditions in all branches of trade and manufacture. The continuation of building operations in the city of Chicago upon a plane, but little below that of last year is reflected in a fair degree of activity among local Hardware dealers. The class of buildings being erected call chiefly for medium grades of Builders' Hardware, such as are commonly used in the construction of dwellings, apartments and business houses of moderate size. As indicated by the issue of building permits for nine months ending September 30, the total cost of buildings in Chicago for 1908 was \$45,779,065, as against \$46,424,880 for the corresponding period of 1907. The difference in value in favor of last year is less than 1½ per cent., while the record for this year shows a distinct gain in number of buildings and frontage covered. The effect of this activity is also seen in an improved local demand for Builders' Tools, which are reported to be moving more freely than for some time. Altogether, the outlook is by no means discouraging, and the feeling among the Hardware trade is, that as soon as the distractions of politics have been cleared away, the fundamental prosperity of the country will assert itself in renewed industrial activity.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Trade has continued since our last on about the lines expected. The weather has been very favorable for threshing and marketing the crops, and the movement of grain to market is phenomenal. Another feature connected with it is the unusually large amount of wheat that is now going forward direct to foreign ports, which shows that the grain is wanted and wanted now. This enables the terminal elevators to relieve the local elevators, and they, in turn, are able to reduce the stock in hands of the farmers.

This unusual condition of the market has also had a very favorable effect on prices, thus steadying and holding them firm in the face of an unprecedented movement of grain. Ordinarily, such a movement would insure a considerable fall in prices, while this fall the prices have been firm, and the farmers, and not the speculators, are getting what the grain is really worth.

In these conditions collections cannot be otherwise than good, and the prospect now is that generally throughout the Northwest, collections will be satisfactory, and at end of the year accounts will be better paid up than they have been for several years past.

Trade may not show quite so much improvement as collections do, but it is in healthy condition, and may fairly be considered normal. This, too, notwithstanding the country is within less than a month of the Presidential election. This election does not disturb the Northwest as much as did 1896 and 1900. Still trade in certain lines is affected, and will stay so until the decision is made and perhaps longer. We believe that the opinion of the great body of intelligent business men is that if Mr. Taft be elected business will respond favorably, and that we may reasonably expect a period of more than usual activity to follow. The conditions of business are certainly favorable for this result. If the election should go in favor of Mr. Bryan, it is also believed by them to be quite as certain that there will be more or less uncertainty and a correspondingly halting along the lines, which may be expected to continue until business interests individually can determine their bearings and see more definitely where they are likely to stand. Which-

ever way the election may go, it is a consolatory thought that the country is "not going permanently to the dogs" in any event.

Cleveland.

THE W. BINGHAM COMPANY.—A good, healthy trade is coming to this market from the country for all kinds of Hardware. The increase in the number of orders for Builders' Hardware in the last 30 days is quite noticeable, showing that there has been a large number of buildings erected in spite of the adverse money market, about which we have heard so much. Crops of all kinds through this section are being gathered and are showing up in large quantities. Of course some of our crops have been affected by the continued drouth, especially in the potato line. Fruits and cereals have panned out much better than was anticipated.

The nearer we come to the Presidential election, the more talk we hear about politics, and we suppose for the next 30 days more attention will be paid to political matters than has been shown for the last six months, and every one of us will be glad when the "die is cast." Politics always have been and always will be a business disturber, in spite of the efforts of the business men to ignore same as much as possible.

Manufacturers are out with prices for next season, so that orders can be taken for goods for future shipment—that is, along in the forepart of next year—such as Steel Goods, Shovels, Spades, Ice Cream Freezers, Lock Sets and other Builders' Hardware. As we approach the holidays there will be many orders placed for goods that are seasonable for this class of trade, and we look forward to a good, healthy business in Cutlery, Scissors, Shears, Razors, Plated Ware, Carvers, Butcher Knives, Chafing Dishes and Coffee Percolators; in fact, the whole line for holiday trade with the Cleveland jobbers is almost unlimited.

Prices are firm and customers can buy Hardware in all its different lines with the assurance that the prices named them will be correct. They need not be afraid of any decline, for all kinds of Hardware are low in price and there is no necessity for a revision. At the present price of Pure Manila and Sisal Hemp Rope we think it would be greatly to the advantage of the trade to place their orders now for shipment the forepart of next year. They are exceedingly low and the quality of goods sold in this market by Cleveland jobbers is exactly what it is represented to be—pure Manila fiber hemp and pure Sisal, no mixture. We do not believe in adulteration. It is preferable to sell a good article at a reasonable price than to offer a poor article at a little lower price. Good, reliable goods we believe always hold and make permanent trade. As Abe Lincoln said, "You can't fool all the people all the time."

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We have nothing interesting at this time to say in regard to trade conditions. While each month shows a very slight improvement over the preceding month, the business so far this fall has been a disappointment to the jobbers and manufacturers in this section.

The night riders in the black tobacco section of Kentucky and a small portion of Tennessee, in their efforts to maintain the price of tobacco, have greatly disturbed trade conditions. The Farmers' Union, in the cotton sections, are not disposed to sell their cotton at the present market price, and for this reason it will probably come on the market very slowly for a little while. Crops generally have turned out pretty well, being above the average in most products. If our farmers would sell their various products at the present prices it would certainly put them in a better financial condition than they have been for a decade. The closest students of political economy in this section have been unable to tell us why we are not prospering. Collections are better in October than they were in August and September.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Two weeks have passed since our last report of conditions in *The Iron Age*, and we are very pleased to announce that

the month of September, 1908, exceeded in volume of business the same month of 1907. This is extremely gratifying, especially from the fact that matters in the Southern countries are about 30 days late, and the money from the crops has not yet been received in the usual volume at this time. Therefore, we believe that in this section of the country the best conditions this year are yet to be realized. We have waited a long time for the turn of the tide, and it is very pleasant to believe that from now on, month by month, the records will exceed those of a year ago.

The realization of the crop prospects has not been quite as good as was anticipated, and conditions are very much spotted indeed. We believe, however, that the general result of the 1908 crop will be that it has exceeded in money value that of all preceding years. This being true, it is difficult to realize that there can be much further timidity or uncertainty in regard to business.

The tonnage of the railroads is steadily increasing. New enterprises are being started in much greater numbers than in the past, and while it will take some little time in the nature of things for a very active business to be brought back to the manufacturers, they will receive the business before long, and things will be running in a normal channel.

Collections are good. The atmosphere seems to be very cheerful, and as soon as the political contest is decided we feel that we will be once more on a smooth sea with a fair wind.

Philadelphia.

SUPPLIEE HARDWARE COMPANY.—The celebration in Philadelphia of its 225th anniversary, designated as Founders' Week, which began Sunday, October 4, ended Saturday, October 10, at midnight. This wonderful celebration was not alone confined in interest to Philadelphia and its inhabitants, nor alone to those whose ancestors came to this country 225 years ago. All those who have come here since that time, even up to the present day, were naturally interested. This city, therefore, opened its arms to all who were able to visit here during the week.

The various interesting events began at 8 o'clock a.m., and continued up to 8 p.m., the important parades beginning at 12 o'clock or 1 o'clock in the afternoon. The number of persons who surrounded Broad street ranged from 400,000 to 800,000, and on Friday, the most important day, the crowd was estimated as about a million persons. The Friday, October 9, celebration, or pageant, was something wonderful, showing representations of the important vessels arriving as far back as 1616 up to July 1776 and 1777, when the resolution was presented and adopted that our various States should be free and independent, and when the United States flag was made and adopted.

The week brought thousands upon thousands of visitors to our city, not only from surrounding States, but from far distant States. The business men who came to our city did not come to buy goods, but to enjoy the week and the various parades, and some of our own customers told us they had attended each day the 8 a.m., the 1 p.m., and the 8 p.m. celebrations, as well as the one on Friday, which began at 8 p.m., and extended up to 12 o'clock midnight.

One peculiar thing was noticeable, that is, the absence of conversation in regard to the trade conditions of the country. The expense incurred by many of those present shows they were not suffering financially, whatever the feeling throughout the country for the last nine months would indicate. Another astonishing thing that has lately presented itself is that the deposits made throughout the country in the trust companies and savings funds societies show equal to those of a year ago.

Among the matters brought to public attention during the week were the number of private dwellings in the city, 310,000, of which 65,000 were built in the last few years; over 850 churches, 335 hospitals, 1400 institutions devoted to the relief of suffering, over 300 public schools, and some 2000 miles of graded and paved streets. The amount of goods manufactured in Philadelphia in a year is something amazing, over 28,000,000 yards of woolen

goods; many millions of pairs of hose and half hose; over 34,000,000 yards of worsted goods; 2663 locomotives; over 45,000,000 yards of carpet, over 2,000,000 dozen pieces of underwear, over 180,000,000 yards of cotton products, and over 5,000,000 hats.

It is very unusual for the writer to touch on anything in his letters to *The Iron Age* outside of the trade of the country. From a conversation the writer had with some business men in the city, they do not predict a large increase in trade before the election of the President takes place early in November, and both manufacturers and jobbers wish this election was satisfactorily passed. Fortunately the crops throughout the country show quite an increase in wheat even over last year; the corn crop is very large and so is the cotton crop, and manufacturers consulted are largely in hopes of an increased trade by the middle of November. Some manufacturers are encouraged by larger orders already, although others think their trade will not increase before the date named. The banks throughout the entire country have large deposits, more so than a year ago. Collections, unfortunately, have been very slow recently.

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—Trade conditions in the trans-Missouri region are normal and satisfactory. The political situation seems to have little or no effect on the general trend of traffic. Business keeps up remarkably well. Stocks in the hands of retail merchants are well assorted, but not large. It requires constant buying in small lots to keep the assortment as it should be; consequently orders received by jobbers are numerous, but light in quantities. This shows a conservative spirit exists, with the idea of doing a maximum volume of business with a minimum of stock on hand.

The Hardware market is comparatively featureless and as most lines appear to occupy a fairly firm position it is very likely that values as a rule will remain about where they are for the remainder of the year.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is aptly described in *The Iron Age* of last week, viz: as marking time. This does not mean, however, that there is zest or apathy. A fellow can get a deal of exercise marking time if he will only raise his knee high enough. Certain articles of manufacture and in common use are so low in price as to attract the attention of the alert buyers, who must ever be on the lookout for just such opportunities. Great tonnages of Bolts, Wrenches, &c., we take it, have been placed at the factories as the trade became convinced that as far as they were concerned at least, that hardpan had been reached. This conviction was strengthened by the manifest unwillingness of makers to enter into long-time contracts. Immediate specifications and shipment at sellers' own time have been the features of such transactions.

The railroads are bestirring themselves, too, as they realize that the roadbeds must be made ready for the winter's flow, and that the cars have been worn out carrying excursionists to and from conventions—freight cars, too, have had to take the place of boats since our rivers have gone dry. Alack, the good money that might be put into equipment and maintenance of way, were it not necessarily squandered in bureaus of statistics for State commissions and the like. Elaborate figures are furnished and tabulated never to be used. They are probably not understood in the first place. The universal remedy for all railroad ills in the popular mind, and that is whence the commission gets its inspiration, is lower rates, lower rates. Reduce the rates, is the cry, whether passenger or freight. Squeeze the life out of them, and you have treated them as they deserve. In the meantime, there must be better service and faster trains, and that means heavier track, more substantial bridges, larger tunnels and more safety devices. If we might have liberal national regulation and cut out all the State or local commissions we should expect to see a vast change for the better. But that is in the far distant future, we fear.

Meanwhile, we are actually giving the railroads more

to do than a little while back. The long string of empties have been run off the sidings and into the shops to be made ready for service. There is a demand for them now, and car shortage before the season is over is freely predicted.

Fortunately, money has kept easy, and all that that means in the way of lubricating the channels of trade has been freely enjoyed.

Politics are tame enough, the spellbinder looking forward to this period of his harvest, has been woefully disappointed. The fact is that the talking machine so common in public resorts, with its vaudeville records, has got him beat as an attraction. For genuine disturbance we have had to go all the way to the Balkans. Is it the Young Turk or the old Turk—the unspeakable one—who is responsible for a new Bulgarian flag? However that may be, it is safe to predict that on the baseball diamond, when the really great conflict comes off, next time the man on first will amble—this is extracted from the official report—all the way to second if only for the looks of the thing. The moral is obvious—once begun, finish your job.

Baltimore.

CARLIN & FULTON.—From general reports, the Hardware trade since September 1 has shown a great improvement when compared with the months preceding it, and has approached very closely in amount that of the corresponding month of a year ago, but in other lines the retail trade complain that the continued warm weather has interfered somewhat with the sale of fall goods, especially of textiles and of wearing apparel generally.

The drought which continued for so long over a large portion of the East, though drying up the springs and streams and pastures, fortunately did little damage to the important crops and the harvests have been abundant; but, on the other hand, in portions of the Carolinas the tremendous rains of August caused great floods with devastation to crops over a large section of country, and where such has been the case business is not active.

With the vast area of our country it is hardly possible to have a complete failure of any crop, and while there may be local disaster or shortage it can seldom be general. The agricultural statistics as furnished by the Government show the basis on which we can safely make our predictions for the future business conditions, and give us something more tangible than mere hopes or wishes.

The market price for cereals has been much more satisfactory than that for cotton, though the immense crop of the latter staple may atone for the present low market quotations. Last year the planters throughout the South were criticized very unfavorably for holding back their crops in order to obtain an ideal price, which never was reached, and the policy this year, we understand, is also pretty much the same; but suppose the entire crop had been thrown upon the market, what would have been the result? Would not the farmer have been forced through necessity to have accepted almost any figure that might have been offered, whereas by united effort the crop was moved gradually and declines were never of a radical nature at any one time.

Locally bank clearings show a large decrease from those of a year ago, which would seemingly show a largely diminished activity in business; but are bank clearings always representative of the actual bona-fide business conditions? A frenzy of speculation on the floors of the stock exchanges may swell enormously the clearings of any financial center and would make it appear that a great business revival had occurred, whereas a dull stock market would show a corresponding depression. Speculation is undoubtedly one form of business, but were the business of the stock exchanges limited to the sale and delivery of the securities traded in actual business, conditions would be more truthfully represented. The gross earnings of the great transportation companies of the country, the reports of the custom houses at the sea ports, and the statements as issued by the Department of Agriculture of the Government tell the story more truthfully than that given by the financial columns of a metropolitan daily.

In a few days the election will have occurred, and then we believe the energies of the country will be devoted to its business interests, and the trade of the politician will become correspondingly dull.

A presidential campaign is certainly educational, for never before have we had so many political economists, financiers and statesmen as have been developed since this one began, and we will not regret when the discussion in the country store will turn toward crops rather than on candidates, and the problems for the press will be the employment of labor and capital rather than the counting of votes.

NOTES ON PRICES.

Wire Nails.—The movement of Nails is confined to moderate quantities, from mills, both on new business and specifications on contracts. Requests for prompt shipment usually accompany orders, indicating that jobbers' stocks are low. Prices continue to be well if not in all cases inflexibly maintained. Quotations are as follows f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00
Less than carloads to jobbers.....	2.00
Less than carloads to retail merchants.....	2.10

New York.—The local market continues without change in its general features. The demand is moderate. Nails are held on the basis of \$2.30 per keg in small lots at store, but this price is not strictly adhered to by all sellers.

Chicago.—While specifications against contracts are coming out fairly well, new orders show a slight falling off, as compared with the business of the latter part of September. In view of the fact that there has been no change in basic conditions, the slower movement is generally attributed to political agitation, which to some extent, doubtless, is affecting business in all lines. Buyers are estimating their forward requirements on a conservative basis, and are ordering in small lots for quick shipment. No deviation from regular prices is reported. Quotations are as follows: \$2.13 in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—New orders for Wire Nails are coming in at a fairly satisfactory rate, but buyers continue the policy of placing orders only for actual needs, not being disposed to accumulate stocks at present. The trade usually requests prompt shipments on orders, showing that stocks held by jobbers are very low. Prices are being well maintained, and we are advised there is an entire absence of any cutting. Quotations for base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00

Galvanized Nails are quoted at \$1 over the price of the regular Nails.

Cut Nails.—Shipments from mills are fairly heavy, made up of orders for small lots, as jobbers are not anticipating future needs. The general price is \$1.80, base, per keg, f.o.b. Pittsburgh, but this price continues to be shaded to the large trade. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—The demand in the local market is light, as it has been for some time. Nails are held on the basis of \$2.15 per keg for small lots at store, but some sellers are occasionally inclined to shade this figure.

Chicago.—The demand for Cut Nails has not increased enough to encourage jobbers to augment their stocks in anticipation of a more active future movement. There is on the whole a little more activity observed, but buying is wholly confined to small lots for immediate use. Prices are, however, fairly firm at current quotations. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, \$2.08; Steel Cut Nails, \$1.98.

In small lots from store: Iron Cut Nails, \$2.25; Steel Cut Nails, \$2.15.

Pittsburgh.—A fair run of new orders is being placed, but they are for small lots only for actual needs, the large trade not being disposed to anticipate requirements. Specifications against contracts are coming in fairly well, and shipments by the mills are moderately heavy. The general market is \$1.80, base, per keg, f.o.b. Pittsburgh, but \$1.75 is made, on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

Barb Wire.—While demand is not as large as was anticipated for this season from all sections of the country, the movement from mills is fairly satisfactory. Regular quotations are reported as being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

Chicago.—The demand is not what it ought to be at this season, when buying for the fall trade is usually well under way. The same causes that affect other Wire products is in some measure responsible for the relatively small business moving. Prices, we are advised, are undisturbed by any irregularity and are regularly held. Quotations are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Fall trade seems to have opened up to some extent, as some fairly large new orders have been booked by the mills in the past week or two, particularly from sections of the country that have been favored by heavy rain. There is also a good run of small orders, and actual shipments of Barb Wire going out from the mills at present are larger than for some time. We are advised that prices are being absolutely maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

Plain Wire.—Orders are largely for quantities covering nearby requirements from jobbers and fence manufacturers. Mills are in position to make prompt shipments, a request frequently accompanying orders. Regular prices are reported as being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....	\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35	2.35
Galvanized.....	2.10	2.15	2.20	2.25	2.35	2.45	2.55	2.65	2.95

Chicago.—A fair amount of new business is coming in and the demand from manufacturers of Fencing is, all things considered, reasonably good. The disposition to hold specifications as close as possible to current requirements is still pronounced and, in consequence, prompt shipments are generally required—a condition the mills are so far able to meet. The maintenance of regular prices, it is claimed, is quite general. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

Pittsburgh.—The Fence manufacturers are placing some large orders for Wire Fencing, one leading concern advising us that it has booked more orders so far this month than in the entire month of September. Jobbers are commencing to stock up to some extent, but as a rule, the bulk of the orders represent actual needs of the buyers. The market is firm, and it is stated that regular prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

Stove Pipe and Elbows.—There is considerable activity in the market for Stove Pipe and Elbows. On account of general conditions and a fear of lower prices merchants have bought somewhat sparingly of these goods. As a result manufacturers' production has been curtailed, and now that trade requirements are more urgent, some are finding it difficult to handle business as desired. For this reason prices are, perhaps, firmer than during the summer, although current quotations are low in relation to the present level of raw material and represent a considerable decline from prices ruling a year ago.

Dripping Pans.—There is no cessation in the sharp competition which has resulted in the present low prices for Dripping Pans. The prevailing irregularity is such that it is difficult to name a price which will represent the market, quotations to the same class of trade ranging all the way from 75 to 80 per cent. discount.

Bolts.—Manufacturers of Bolts state that business continues to show improvement, although the demand from large consumers is still light. Orders from the trade are in very fair volume, and prices are well maintained.

Conductor Pipe.—A noteworthy feature of the market on Conductor Pipe and Evans Trough is the fact that a price has now been established on Copper lines, which until recently have been weak and irregular. The published discount is now 50 and 10 per cent.

Soil Pipe.—There is very little activity in Cast Iron Soil Pipe and Fittings, and such business as is doing is at concessions in price. The market is low and irregular, but as regards the light business doing it may be represented by a discount on Standard 2-6 in. of 70 and 10 per cent., on Extra Heavy from 75 and 10 to 80 per cent., and on Fittings from 80 and 10 to 85 per cent.

Sash Cord.—Quotations on Sash Cord, which have been pretty steady for a long period, are firm at the present time. Jobbers' prices, though still sometimes lower than those of the manufacturers', seem to be somewhat higher than they were, in as much as stocks purchased at the lowest figures touched in the spring are largely disposed of. The market on small lots may be represented by a quotation on Nos. 8 to 12 of 21 to 22 cents per lb.

Window Glass.—Among important recent events is the issuing of a call for a general meeting of representatives of hand operated Window Glass factories, to be held on October, 14, 15 and 16 at Pittsburgh. The call was sent out by the committee who has had charge of forming a manufacturers' organization. The committee feels that it has done about all that is possible for it to do, and considers it proper to place the matter in the hands of the manufacturers for them to complete the work. About 1300 pot capacity of hand operated plants is supposed to be making Glass at the present time. Workmen and representatives of hand operated factories failed to come to an understanding on wages for the month of October. It is recognized that a settlement of these two important matters in a satisfactory manner means much for the successful continuance of Window Glass manufacturing in this country. It is reported that published discounts of manufacturers are not adhered to in all cases, being shaded sometimes by producers who are anxious to market goods. Some manufacturers who make a specialty of turning out a high quality of Glass are understood to be holding prices steadily. Manufacturers' discounts, for hand blown Glass, from manufacturers' list of January 1, 1901, are as follows: For regular single strength Glass, 90 and 20 per cent.; for double strength Glass, 90 and 25 per cent. Eastern jobbers' quotation from jobbers' list, October 1, 1903, for all sizes of single and double strength Glass, covering the territory east of Chicago, is 90 and 20 per cent. discount.

Rope.—The movement of Rope continues moderate in volume and orders represent light requirements as a usual thing. Owing to the scarcity of Jute Fiber and the demand for Jute goods, some manufacturers have advanced

prices and others are expecting to do so if the fiber continues to advance. General quotations for Rope 7-16 in. in diameter and larger are as follows: Pure Manila, 9 cents; Pure Sisal, 7 cents; No. 1 Jute, $\frac{1}{4}$ in. and up, $5\frac{1}{2}$ cents; No. 2 Jute, $\frac{1}{4}$ in. and up, 5 cents.

Linseed Oil.—Business is largely confined to small lots in barrels, of which there is a fair volume. Quotations are as follows: State and Western Raw in small lots, 41 cents per gallon; City Raw, 42 to 43 cents, in small lots per gallon. Boiled Oil is 1 cent advance on Raw.

Spirits Turpentine.—The prospect of the formation of the proposed selling company in the South is thought by some to have caused an uncertainty in the minds of prospective buyers as to the future stability of the market. The argument is advanced in certain quarters that the formation of such a company is likely to result in sharp competition with other large interests and an irregular market. Local demand is light. The New York market is represented by the following quotations: Oil Barrels, 38 to $38\frac{1}{2}$ cents; Machine Made Barrels, $38\frac{1}{2}$ to 39 cents per gallon.

Trade Items.

At the Tennessee State Fair held recently, the Gray & Dudley Hardware Company, Nashville, distributed 10,000 watch fobs as souvenirs. The fob was in the shape of a Griddle and was turned out at the company's foundry, while the leather strap attached was a product of the company's Harness factory.

THE LOWE BROTHERS COMPANY, Dayton, Ohio, has found its New England business growing so rapidly as to make necessary an additional branch, which has just been located in Boston. The company has taken a warehouse at 21-23-25 Farnsworth street, where offices and display rooms will be maintained for the special benefit of its customers in New England. The company's New York branch, which has heretofore supplied this section, will be occupied with the rapidly growing business in the territory immediately about the metropolis.

LINCOLN-WILLIAMS TWIST DRILL COMPANY, Taunton, Mass., has issued a handy price-list of its Peerless High Speed Twist Drills, which are made with straight or taper or V shanks. This line of Drills was formerly advertised under the name of Yankee, but finding that that word had been adopted by another manufacturer of Cutting Tools, the company changed the name of the line to Peerless. The price-list describes in detail the method of manufacturing the Drills, and recommends them as strong, durable, highly finished and calculated to give satisfaction to the most exacting user.

THE INDEPENDENT STOVE COMPANY, makers of "Renown" stoves and ranges, formerly of Detroit, Mich., is now installed in its new plant, at Owosso, Mich. The moving of the plant was accomplished in record time. The dismantling of the Detroit plant did not begin until October 1, and within eight days from its commencement the company loaded and shipped to Owosso 29 carloads of equipment and material, and at the same time got the new factory into such shape that everything was prepared to begin mounting stoves on October 12.

THE MISSISSIPPI RETAIL HARDWARE ASSOCIATION, John E. Sommers, secretary, Clarksdale, will hold its next annual meeting in Jackson, May 11 and 12, 1909. As is the case with so many other annual gatherings of State retail Hardware associations, it has been determined to provide quarters for an exhibition of Hardware products by manufacturers and jobbers.

At the annual meeting of the New York State Association of Hardware Jobbers, held at the Hotel Rochester, Rochester, on the 8th instant, the former officers were re-elected for the ensuing year, as follows: Edgar C. Neal, Buffalo, president; Robert H. Treman, Ithaca, vice-president; Joseph Born, Syracuse, secretary-treasurer; Irving D. Booth, Elmira, and James H. Boucher, Rochester, directors.

THE third annual convention of the Wisconsin Retail Implement and Vehicle Dealers' Association will be held at Milwaukee, December 8, 9 and 10, at the Republican

House. This association includes many Hardware merchants and was organized several years ago in response to a general sentiment that it was desirable to have a separate meeting rather than to transact business relating to the handling of Agricultural Implements in connection with the convention of the Wisconsin Retail Hardware Association, which meets in February.

WILLIAM A. TOTTLE & Co., Baltimore, Md., proprietors of the Crown Brush Works, have made arrangements with C. K. Turner & Sons, 116 Broad street, New York, to handle their export business on Brushes of various kinds, such as Paint, Varnish, Sweeping, Dusting, Artist Brushes, &c.

IN connection with the farmers' fall festival in Richmond, Ind., one of the local papers issued a special edition of large proportions in which a good deal of matter on agricultural topics was published. One of the advertising pages was occupied with an imposing announcement of the Jones Hardware Company of Richmond, in which attention was directed to the noteworthy growth of this house during the 25 years of its existence. The business was inaugurated in a store 20 x 100 ft. in dimensions, while the space now occupied amounts to about 120,000 square ft. of floor area. Over 50 employees are required the year round, and the daily average number of customers is said to be 500. The motto of the company as it appears in the advertisement and on its stationery is "Most Everything."

AMONG THE HARDWARE TRADE.

The firm of Hightower & Graves, Atlanta, Ga., has been dissolved and reorganized as the Hightower & Graves Company, Inc. The new concern expects to carry a complete line of general Hardware, Builders' Hardware and tools, in addition to the lines of Stoves, Ranges, Refrigerators, &c., formerly sold by the old firm, Hightower & Graves.

The Davis Hardware Company, Fort Scott, Kan., has increased its capital stock from \$10,000 to \$20,000, and amended its charter by changing the name to Armstrong-Davis Hardware Company. A retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods is handled.

The stock of S. J. and T. F. Thomas in the S. J. Thomas Company, Gainesville, Fla., has been bought by S. J. Gunn, C. W. Sproull and T. W. Shands, who will continue the business under the old name, but with increased capital and larger stock.

The Hinkley Hardware Company has purchased the business of Julius Marr, St. Joseph, Mo., and will handle Shelf Hardware, Stoves, Tinware and Sporting Goods, the latter being an addition to the lines handled by the former proprietor.

A. F. Hamann has purchased the Hardware, Stove, Paint and Sporting Goods business of Fred Strube, Lake Park, Iowa.

D. R. Magers, Hutchinson, Kan., has sold his Hardware, Paint and Sporting Goods business to Cover & Neighbors.

P. V. Lenz, Carroll, Iowa, has been succeeded in the Hardware, Stove and Plumbing business by Lenz & Collison.

Ball Bros. are opening a Hardware, Stove, Implement, Paint and Sporting Goods store at Bartley, Neb.

A fire in the store of John Simpson Hardware Company, Tehama, Cal., caused a \$10,000 loss.

THE E. A. PFLUEGER COMPANY, Akron, Ohio, has issued its illustrated catalogue for 1908-9, referring to an extensive line of Fishing Tackle, Reels, Hooks, Artificial Bait, &c. The book is carefully indexed, and the price-lists of goods are clear and, for the most part, accompanied by actual size illustrations.

CATALOGUE SYSTEM OF A WESTERN HARDWARE HOUSE.

IN the accompanying Fig. 1 is illustrated the catalogue department of a Western Hardware house, the efficiency and convenience of which will doubtless appeal to many of our readers who are looking for good ideas along this line. At the left is a cabinet containing 60 drawers which are numbered consecutively. Catalogues, circulars and other printed matter are here arranged in alphabetical order under goods. Drawer No. 39, for instance, might refer to Rules; 40 to Sand Paper and Scales; 41 to Steel Goods, &c. Of course, these drawers might also contain other articles which would be shown by the index. Each drawer has a card label on the front, giving its number and the principal lines which it refers to.

Two Alphabetical Card Indexes

are employed, one under firm names, Fig. 2, and the other under goods, Fig. 3. Knowing the name of the firm manufacturing a certain article, the firm index card would show the number of the drawer in which the catalogue would be found. Not knowing the name of the manufacturer, the index under articles would show the number of the drawer in which the catalogues of the line in question were contained. Where concerns make more than one line, the printed matter is separated, if possible, so that it may be filed in the proper drawer. Otherwise confusion is, of course, avoided by the cross index.

On the shelves at the right of the main cabinet will be observed some open shelves, on which are kept the larger catalogues and those which are frequently referred to. These are not so numerous but that they can be neatly arranged and easily kept track of without indexing.

Below the shelves is an electrotyping cabinet, in which the company keeps its advertising cuts. They are all indexed, the drawers being divided into sections and lettered. Under C would be found Chisels, Clippers, Col-lars, Cuspidors, &c.

The company states that previous to installing this

Southern Supply and Machinery Dealers' Association.

A MEETING of the officers and Executive Committee of the Southern Supply and Machinery Dealers' Association was held in Louisville, Ky., on the 21st and 22d ult. Those present were J. C. Miller, president, Huntington, W. Va.; Alvin M. Smith, secretary-treasurer, Richmond, Va.; J. A. Riechman, chairman, Memphis, Tenn., and Mallory Bedingfield, E. F. Hartfelder, Savannah, Ga., H. C. Clark, Charlotte, N. C., members



Fig. 1.—Catalogue Department of a Western Hardware House; File at the Left, with Open Shelves and Electrotyping Cabinet at the Right.

of the Executive Committee, and W. H. Banks, chairman Manufacturers' and Conference Committee, Huntington, W. Va. Suitable resolutions were passed relative to the death of Charles H. Briggs, Briggs-Weaver Machinery Company, Dallas, Texas, former president of the association. Resolutions were also passed reindorsing the resale plan as adopted by many of the manufacturers, who were urged to assist the membership as much as possible in maintaining these prices. The members of the association were requested to take up with their va-

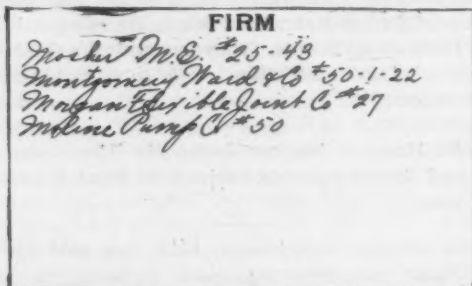


Fig. 2.—Card from Index Under Firm Names.

system its catalogues were kept in large drawers, and great difficulty was experienced in finding the right one. Since they have been classified in the file drawers, they may be easily and quickly referred to. It is the business of one of the clerks to keep up the catalogues both on the shelves and in the file. All incoming printed matter is referred to him; he examines, classifies, and files it, destroying old editions as new ones are received. Nothing of this character that comes to hand is thrown away without giving it some consideration.

THE former Ohnstrand Metal Furniture Company, Jamestown, N. Y., is now the Jamestown Metal Furniture Company. Artistic equipments in steel and bronze for public buildings, banks, offices and libraries are furnished.

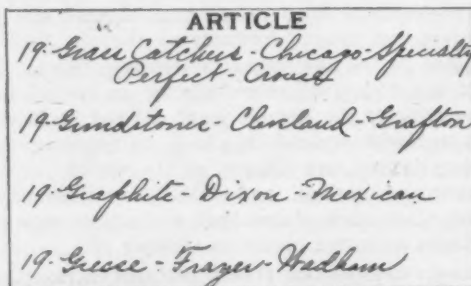


Fig. 3.—Card from Index of Goods.

rious trade bodies the subject of the proposed advances in railroad freight rates. A resolution also prevailed urging the Postmaster-General to abandon his effort to have public school principals throughout the country instruct their pupils in the beauties of the parcel post system. The members were urged to give preference in their purchases to concerns affiliated with the American Supply and Machinery Manufacturers' Association, and the manufacturers on the other hand were asked to market their product only through the legitimate trade and to discontinue the practice of selling their lines through brokers, manufacturers' agents, &c., who call on consumers.

H. E. Boyden, Medford, Ore., has been succeeded by the Medford Hardware Company, J. G. Bigham, manager.

HARDWARE FREIGHTS.

A Texas Merchant's Method of Handling Freights.

THE following outline of methods pursued by an able wholesale merchant will be suggestive as showing the attention which is given to the subject and the way in which freight matters are taken care of in his establishment:

In every well regulated business freight matters should be in charge of one competent person.

The manager of the freight department should be supplied with all the up to date freight tariffs, which are always easily obtainable from the freight agents. He should make himself familiar with all the details. If he strikes a knotty point he should get the information required from the freight bureau, if there is any such in his city, or if not, from the most competent freight agent.

1. ATTENTION TO INVOICES.—I use the following system: Invoices and bills of lading are pinned together when received. The invoice is refigured in order to discover any mistakes in price, extension or addition. Next it is filed away in an alphabetical box file, and held until the goods arrive and are entered on the receiving book by the receiving clerk.

2. RECEIVING CLERK'S WORK.—After the goods have arrived the receiving clerk checks up with the freight clerk. If all the goods come up correctly as invoiced, the bill of lading and expense bill are filed away, and the invoice is pasted on the invoice book, and from there posted on the ledger.

3. TREATMENT OF ERRORS AND CLAIMS.—If the goods check short or are damaged, or the rates are too high, or the weights are not correct, the freight clerk takes the bill of lading and expense bill and writes a letter to the freight agent, giving the nature of the claim in detail and sends all to him by mail. I have found by experience that when a freight claim is sent to the freight agent by an office boy, it is much more frequently lost or misplaced than when it is sent by mail.

4. FREIGHT CLAIM BOOK.—I keep a special book for this purpose, which I label, "Freight Claim Book." In this book each railroad company has one or more pages, on which a record is kept of all the claims made against that company. Every claim must specify the date and number of expense bill, name of shipper, date of bill of lading, nature of damage, amount claimed, &c.; also the page of the letter book on which the letter giving details of the claim has been copied. When a claim is settled, I write across the face in red ink, "paid," and give date of payment. I also draw a blue-line through the center of that claim.

5. NEGLECTED CLAIMS.—I find it necessary to check over this book from time to time, to see if any of the claims have become "ancient history" or have cultivated "gray whiskers." In that case, a gentle reminder to the freight agent with a request to resurrect such and such a claim will bring good results.

6. PATIENCE AND COURTESY.—I have discovered by experience that I can produce better results by patience, kindness and courtesy towards the claim departments of the railroads than by bluster, threatening suits or insulting language. I have also found that as a rule the railroad companies are honorable and are willing to adjust and settle legitimate claims.

A Manufacturer's Experience.

The following letter from a prominent manufacturer narrates his recent experience with a railroad company whose claim department declined to stand for damage to shipment which had been acknowledged by the company's inspector:

I note you describe how to present claims to the transportation companies. A recent experience of ours shows the necessity for care and thoroughness, as well as knowledge in handling these matters. We received from the — railroad a carload of Cold Rolled Sheets. On receipt the material was found badly rusted, which

damage was evidently caused through a leaky car. We immediately notified the railroad people of its condition before unloading, and requested that they have a representative inspect the material, as it was our intention to claim damages. They complied with this request, and

Acknowledged the Damage.

their representative definitely acknowledged the damage and instructed us to unload and present our bill. We did so and were much surprised at the refusal of the claim department to admit our claim. A lengthy correspondence was had, with the final result that the railroad company definitely refused to pay the damage, claiming that we had not proven that the damage was caused by a leaky car.

You can see that we pursued what would usually be considered a proper course in presenting our claim, and in fortifying it with an explanation by the railroad's representative, yet the claim was disallowed. This seems to us to be an instance of definite unfairness to the shipper, yet the only appeal is a suit at law, which would not be warranted by the amount of money involved.

This case illustrates that the damage and its causes must not only be approved by the railroad's inspector, but the responsibility must be acknowledged by the claim department before being recognized. This at least appears to be the rule, so far as the —

New Exercising Greater Care.

Railroad is concerned. We have not had a similar experience with any other railroad in the country, but we now exercise care in having the railroad committed before consignments are unloaded.

If this series of articles on Hardware freights is read with proper care by the merchant, he will certainly be benefited, as there are many ways to economize in freights and also devious ways by which consignments can be made to advantage, requiring only the knowledge which you are imparting to your readers.

Freight Losses, Like Cash Discounts, Are Imposing in the Aggregate.

An Ohio merchant, in commending the articles on this subject which have appeared in our columns, writes suggestively as follows:

Your articles on Hardware Freights are interesting in that they bring out some ideas for saving in freights that have been overlooked by most merchants, principally because the amount in any one case was small, and it took too much trouble to get the matter righted. These little losses are a good deal like discounts, not large amounts, but the aggregate, when carefully computed, is an occasion for astonishment to those who have never done anything of the kind. We are inclined, or at least have been, to take the bills presented to us for freight as correct. I think it is a safe rule to adopt that there is no more accuracy in the ordinary bill clerk of a railroad than there is in any other class, and therefore they need as much watching as we do.

I had a case this morning. Two barrels of Venetian Red came in from New York, rate 39 cents. They were billed to us at 860 pounds, when the actual weight was but 713 pounds, a correction worth making. As the importer who shipped the goods to us failed to inclose a B/L, I am compelled to write for one. In the meantime I had to pay the freight, and will put in my claim as soon as I get my papers.

I speak of this to call merchants' attention to the necessity for insisting on B/L for all shipments, so that mistakes can be rectified promptly, so that a checking can be made on the goods when they come in. I am glad that the subject is being brought forward for discussion, because it means, I hope, the stopping of one of the small leaks that often adds very much to our expense accounts. Profits are too small to overlook any kind of a leak. There always has been a leak in freight bills, and it is time that some effort was made to stop it.

It is a good idea to check up carefully all goods that are bought and to weigh all the oil that comes in and to measure the volatile liquids, such as Tur-

Weight and Measure. Turpentine and Alcohol (wood) or denatured spirits. These liquids are subject to leakage, and often a delay on the road of Turpentine shipment means quite a loss that would never be discovered unless the goods are weighed or measured.

General Classification Sheet.

A Michigan retail merchant writes as follows referring especially to the value to the merchant of a general classification sheet:

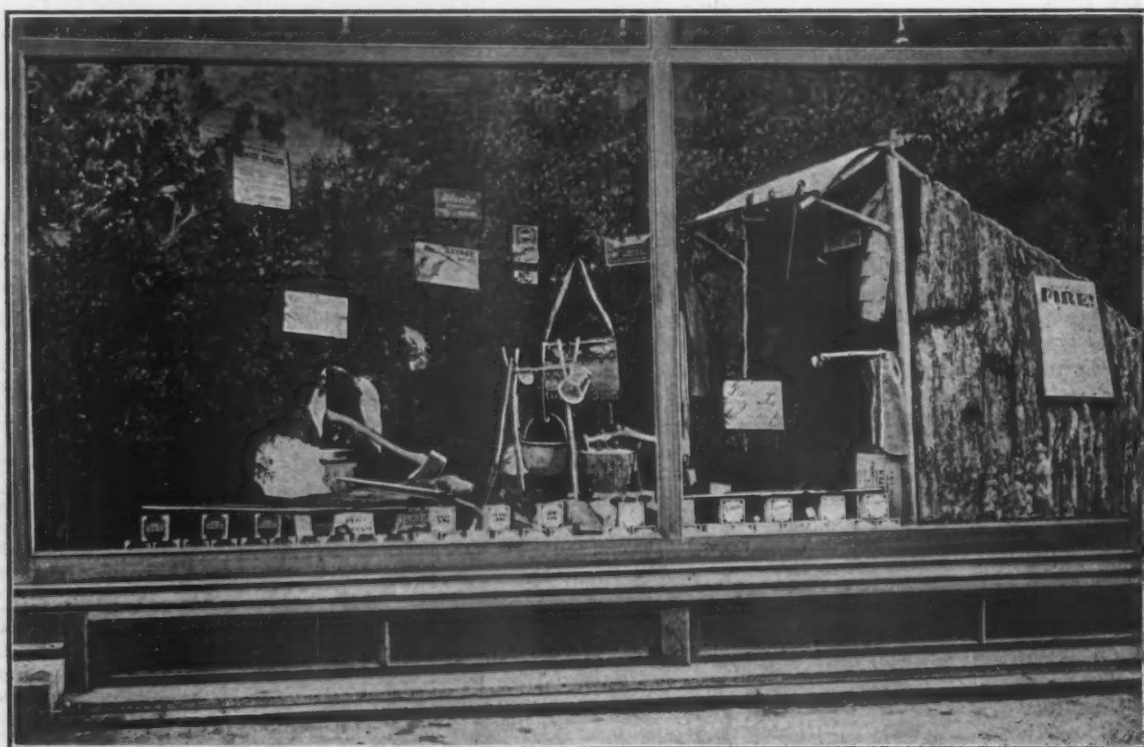
We are glad to note that you have taken up the discussion of Hardware Freights, for we regard this as a vital matter, and any effective method followed out will, in our judgment, benefit all classes of dealers. For a number of years it has been our custom in checking off our freight expense bills to search out any errors in extension or rate. In cases where bill of lading has been furnished and the rate contracted for, to see that no variance existed, and in other cases to see if we had been given the correct classification and rate.

We have been more or less familiar with the classification sheet and the tariff rate of freight from the vari-

A HUNTER'S CAMP.

A HUNTER'S CAMP in the Adirondacks is the subject of the window display of H. D. Thompson & Co., Malone, N. Y., which is reproduced herewith. The display was installed during the County Fair held in Malone and was pronounced remarkable for its naturalness, its local color and the pains with which it was worked out to the most minute details. For a background an excellent sky effect was obtained by using light blue cheese cloth stretched tight, while the woods were represented by young cedar trees from 4 to 7 ft. high, with maple branches, stumps, &c., arranged to carry out the illusion. The ground was covered with autumn leaves and a half hewn log with an Axe sticking in it was shown at one side of the camp fire which burned in front of the camp. The fireplace was realistically made from blackened stones, ashes and burn wood and bark, with a Kettle suspended above it from notched sticks and camp cooking utensils hanging about. The effect of fire was given by a hidden electric light.

The camp was of the lean-to design, built of poles and bark and covered with Paroid roofing. It was 7 ft. long



Window Display of H. D. Thompson & Co., Representing a Hunter's Camp in the Adirondacks.

ous points where we make our purchases. The result has been that we have found errors that have crept in both in the extension and tariff rate, mainly by oversight of the agent or billing clerk, due largely to press of work. The merchant having a general classification sheet can keep a record of the rate on various classes of freight from jobbing and manufacturing points to refer to in carefully going over the expense bills. While this method is valued in the saving of money by detecting mistakes, it is of no little value in securing freight equalization from selling centers on some classes of staple goods. This plan enables the dealer to order from the most favorable point for freight.

Ordering from Favorable Point.

While we have not followed the plan as vigilantly as we might, we are convinced by the amount we have saved that it is profitable work for a rainy day as well as any business day. This method should go hand in hand with the payment and discounting of invoices.

Relative to claims for overcharge, errors, or damage, the rank and file of railroads are slow in adjusting, as is well known. We believe all claims should be persistently pressed for payment, and that any dealer who neglects to give the proper attention to these matters, is overlooking important work that would yield a return amply sufficient to pay for the time it involved.

by 6 ft. wide and about 6 ft. high—just about the dimensions which an actual camp would have. Inside was a bough bed, and partly covered with a heavy blanket lay a dummy figure of a man representing the hunter turned in for the night. Near him was a card on which was written with charcoal, "Please go away and let me sleep." A hunter's license was in evidence and a $\frac{1}{2}$ -pint flask lay near at hand. Two stuffed deer heads were placed so that the animals seemed to be inspecting the camp and the sleeping hunter. A wash basin on a Winchester cartridge box and a dirty towel hanging on a limb, with a few cans of baked beans, cracker boxes, &c., completed the picture.

For advertising effect Savage, Marlin and Winchester signs were hung on the trees, and the hunter's outfit showed the different kinds of supplies, &c., carried in stock. A few modern Guns and small quantities of ammunition of all kinds were shown. Revolvers, Hunting Knives, Hatchets, Compasses, Hunting Coats, Leggings, Meat Saws, and, in fact, everything a hunter might require, were shown, but always in small quantities, so as not to break the general effect.

The selling power of the display was good and covered the entire line shown. The firm states that every day numerous sales were made which could be traced directly to the display.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

GRINBERG BROTHERS, 153-156 South street, New York: Illustrated catalogue of Enterprise and Eagle gas and oil Stoves, Royal Coal and Ranges, Stove and hot air Pipes, stiff and adjustable sheet metal Elbows, &c.

GOSHEN SWEEPER COMPANY, Grand Rapids, Mich.: Illustrated catalogue and price list covering an extensive line of Carpet Sweepers.

STANDARD PAINT COMPANY, 100 William street, New York: Illustrated catalogue referring to Ruberoid Roofing; also booklets and circulars referring to Insulating Specialties, Metal Preservative Paints, &c.

CINCINNATI MFG. COMPANY, Cincinnati, Ohio: Catalogue No. 32, relating to Brushes, Wire Goods, Bird Cages, Ornamental Steel and Bronze Work, Stable Fittings, and Ticket Punches.

FOREST CITY BIT & TOOL COMPANY, Rockford, Ill.: Catalogue H, referring to Wood Boring Bits, Hollow Mortising Chisels, Common Mortising Chisels and Mortising and Boring Machine Tools.

LINDSAY LIGHT COMPANY, Chicago and 91 Chambers street, New York: Illustrated catalogue of Gas Lights, Incandescent Mantles, Burners and Lighting Specialties, &c.

KEMP MFG. COMPANY, Toronto, Ont.: Illustrated catalogue, with convenient thumb index, referring to Enamelled Steel Ware, Tin and Japanned Ware, Sheet Steel and Galvanized Ware, Copper Ware, Elbows, Lanterns, Oil Stoves, Wire Goods, and general Kitchen Furnishings.

G. A. SWINEFORD COMPANY, Canton, Ohio: Illustrated catalogue of Hardware Specialties, including Hay Carriers, Forks, Pulleys, &c.; Lawn Rakes, Barn Door Rail and Rollers, Hay Knives, Steel Snow Shovels, Cold Chisels, &c.

J. P. EUSTIS MFG. COMPANY, Boston, Mass.: Illustrated Brasscrafters' catalogue, with 1908 supplement referring to Metal Frame French Plate Mirrors, Shower Baths, and a general line of Bath Room Accessories.

CASSADY-FAIREBANK MFG. COMPANY, 6106-6130 La Salle street, Chicago, Ill.: 1908 catalogue supplement illustrating Kitchen Specialties, Soap Dishes, Match Holders, Nickel Plated Steel Ferrules, Handles, Dowels, Fruit Jar Wrenches, Towel Bars and Racks, Flat Iron Cleaners, Lampstoves, Pot Covers and Rack, Bath Tub Seats, Broom and Brush Holders, &c.

J. B. FOOTE FOUNDRY COMPANY, Fredericktown, Ohio: Illustrated catalogue relating to Church and School Bells and another devoted to Block Machines. Separate circulars show Ice Cream Freezers and Washing Machines.

NATIONAL MFG. COMPANY, Sterling, Ill.: Booklet showing Big 4 Barn Door Hangers and Rail, Washburn Door Latch and Stay Roller.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: Sheets for insertion in its loose leaf catalogue, relating to Tools, Firearms, Skates and other fall and winter goods.

PHILADELPHIA LAWN MOWER COMPANY, Philadelphia, Pa.: Illustrated catalogue for 1909 covering an extensive line of hand and horse Mowers, Lawn Sprinklers, Grass Collectors, Horse Boots, &c. Some of the machines are illustrated by full page color plates.

SILVER MFG. COMPANY, Salem, Ohio: Circular relating to the Ohio Ensilage Cutters, which gives lists of universities, agricultural experiment stations, charitable and public institutions using the Cutters. The machines are also used by dairymen, stockmen and farmers.

Warnhoff & McClees Hardware Company, Wichita, Kan., has dissolved partnership, having been succeeded by the McClees-Weeds Hardware Company, which has been incorporated with a capital of \$15,000.

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Here and There in the Sales Department.

BY SAMUEL MASTERS.

IV.—PREPARING A CATALOGUE.

CHARLES MARTIN, the manager of the city store of Hartman Brothers, was full of enthusiasm concerning the catalogue of factory supplies which I had been asked to prepare.

"We want to make it complete, Sam," said he. "There aren't many people who know how very extensive our assortment is. There is hardly a week that someone doesn't express surprise at finding we have this or that, and tell me of the orders they could have given me if they had known we handled it. We want to put in everything that goes into a factory, whether as a part of its equipment or tools in the hands of the workmen. Just titles, you know, with the briefest description in order to show the assortment, and arranged so that anyone can find what he wants without searching for it. Let's make it a handbook—a list to which every Ironvillian who wants anything for use about a factory will turn and find it, and of a size to go into any man's pocket."

"Shall we put in prices, Mr. Martin?" I asked.

"No! No!" said he irritably. "How can we, Sam? This isn't a department store. We can't even mark the goods on our shelves with plain figures, because every man who has an account wants something off. We will make this a list of goods. I'll fix the prices if it is necessary to make any reduction from the regular figures."

Quality the Keynote.

Hartman, Junior, wanted to retain the title of "Blue Book." "It stands for quality—just what our stock represents. The Ironville blue book gives a list of the 'quality' among our citizens, and everyone who has a copy will know what the title means. Make it look like the jewelry book and the effect will be strengthened with every person who has seen a copy—and it's a mighty good model to follow for those who haven't."

Making Haste Slowly.

The work progressed slowly. If my memory serves me aright, I rewrote the manuscript a dozen times, in order to mention goods which had been overlooked, or to boil down what had been written. At first, I tried to say something about each article—to call attention to its best features, praise its finish or excellence or comment on its cheapness; but the general effect was not good, and the blue pencil trimmed out all redundancy until little more than a bare list of articles remained. In the "over" stock bins I found many articles which were not displayed in the store. The wholesale stock sheets were searched for articles which could be added to the line carried in the city store. It was the first time that a comprehensive list of the goods for the city trade had ever been compiled, and the task was not an easy one.

Creating a New Stock.

In a number of instances the catalogue led to changes in the stock. It was found, for instance, that the line of Dirt Shovels needed strengthening by the addition of a brand that could be sold to compete with a cheap contractor's Shovel handled by two of the local competitors. This was done. The assortment of Machinist's Tools was thoroughly revised. The stock of Emery in cans was enlarged. A competitive line of Sandpaper was added. The house had carried foundry riddles for the benefit of two or three large buyers, and now added Crucibles, Chaplets, Brushes, Bellows, Rammers and an assortment of Molders' Tools of a standard brand. A few Plumbers' Tools of the kind used in factory fitting were added to until a goodly assortment of appliances for plumbers resulted. Indeed, it seems to me now that there were few classes of goods which were catalogued just as I found them.

Selling Job Lots.

There were other articles which were removed from the regular stock and placed upon a job list. In this I was permitted to follow a plan I had used for my for-

mer employer. I made up a list of the job goods, had it set in type at a nearby printer's without much of an attempt to classify the items, and furnished each salesman, wholesale and retail, with copies for his own and his customers' use. He was permitted to quote a moderate reduction from the regular prices, and was given a bonus of 5 per cent. upon his sales. Most of the goods were sold in this way without much urging, the small unsaleable balance being disposed of through a New York auction house.

Co-operation.

Everybody was willing to assist me. Mr. Martin and Hartman, Junior, were known to be especially interested in what I was doing, and stockmen, clerks and buyers readily fell into line. Mr. Martin disliked detail work, and when the list of goods in any class showed a weakness, was content to give me instructions as to what he wanted added to strengthen it, and let me take the matter up with the buyers, reporting to him from time to time as developments occurred. Clerks who had felt that their stocks lacked in some particulars, stated the facts to me, thinking that I might be able to secure an improvement where they had failed. Stockmen told me of goods which did not move. The buyer of factory goods told me of a number of things which seemed to him to be good, but to which Mr. Martin had not given favorable attention. Everything that came to me was put into presentable shape and put before Mr. Martin or Hartman, Junior, for a ruling.

Harmony Maintained.

I very seldom took matters to Hartman, Junior, and with a single exception, when Hartman, Junior, was consulted, it was before anything had been said to Mr. Martin. Mr. Hartman would then discuss the subject in hand with Mr. Martin in a way that would bring that gentleman to the point of view desired, and he would then give me instructions to do just what it had been predetermined would be best to have done. In every way possible I avoided a direct issue with Mr. Martin, or bringing about disputes between him and Hartman, Junior.

All Work and No Play.

At this time I rarely left the store before 10 o'clock at night. At six, the curtains were drawn and the doors locked, and after a hasty lunch I set about exploring the shelves and stock cases. I felt that this was my opportunity for gaining an intimate acquaintance with the stock, and there was not a drawer or shelf or cupboard or bin whose contents I did not know, as well as the clerk in charge—and better in instances.

I had a powerful spur to activity. It was the first time since I had entered Hartman Brothers' employ that I had found any chance for material advancement. In addition I had met the girl who afterwards became my wife, and felt that I must succeed for the sake of a future with her. If I left undone a single thing which would have contributed to success, I cannot now recall it.

The Early Worm.

For about two weeks at one stage of the work I found it expedient to get to work very early in the morning in order to accomplish what I wished to do. One morning at about half past five o'clock Hartman, Junior, walked around the end of a counter and found me seated on a paper spread out on the floor, busily listing a line of draughtsman's and surveyors' tools which had been stowed away and nearly forgotten. There was very little said by either of us, and he passed on to catch an early train out of town. I remember that I was distinctly annoyed at being found out, for Hartman, Junior, believed working overtime was a sign of incapacity; but I do not now think that my industry lowered me in his estimation.

(To be continued.)

C. PETER BOOS, for many years in the retail Hardware business in Jersey City, N. J., died suddenly on the 7th instant. Mr. Boos was born in Germany and was brought to this country by his parents when two years old. He had been identified with the Hardware business of the city for a period of nearly 35 years.

THE HARDWAREMAN IN POLITICS.

AN ADDRESS BY HON. F. F. JONES, VILLISCA, IOWA.

POLITICS in the highest sense deals with the administration of public affairs in the interest of the peace, prosperity and safety of the State. There is another sense in which politics means the conduct of public affairs so as to carry elections and secure public office—party intrigue and political wire pulling.

Those engaged in political activities, who are serving the best interests of the State, may be called statesmen.

Those engaged in working politics for private advantage or party success we will call politicians.

The former are *men* in politics.

The latter are *spoilsmen* in politics.

The political need of this day and age in all phases of public affairs is the elimination of the *spoilsmen*, and the substitution of *men*—level headed, broad gauged, forceful men. Men with standing in their communities. Men with business training and ability. Men of character.

I am persuaded that these specifications can be fully met from the ranks of the Hardwaremen of Iowa.

In your respective communities you know that the forceful characters, the aggressive workers and the alert and self-reliant men include a large percentage of business men. They are organizers, they have the initiative, and, best of all, they have ingrained in their characters a disposition to be *square*.

But the civic conscience of the business men engrossed in his business is not strong. He is interested in his personal affairs to the neglect of his duty as a patriotic citizen. He feels that he stands to lose in every way by having to do with politics. Many of his best friends suggest to him that it is "no place for a decent man." He knows that he must deal with a fickle public, and that it will be impossible to please all factions. So he "sticks to business," while some fellow who has no business or reputation that politics can harm, cheerfully assumes the activities and absorbs the honors or distributes them to his friends.

This hesitancy to accept office or to have to do with politics obtains not only with business men, but with men of large caliber and good character of all professions and callings.

Afraid of Politics.

Such men are afraid of politics because of the *methods* employed. And it is hardly fair to criticize men for avoiding a service in which because of prevailing methods his business is jeopardized, his reputation besmirched, his motives impugned, and his freedom of thought and action questioned by some *boss* or *faction* or *selfish interest*.

Business men in politics are desirable. They exert a wholesome influence upon the people at large. They insist that economy be practiced in administration, and that the public service be made more efficient. But if we are to persuade superior men in increasing numbers to greater activity along political lines, our citizenship must become a party to some much needed *reforms*.

1. We as a people need to revise our *moral standards* as applied to politics.

2. We as a people need to use more business sense in our attitude toward *men and measures* political.

A man who is tricky in politics will need watching in business, and is not to be trusted too far in his transactions with his neighbors. He may belong to the "meetin' house" and conduct a respectable business, but if he is dishonest in politics he is dishonest.

Prevailing political methods cannot be reformed in a single campaign, but the influence of the church in public affairs, the training in our colleges and the work of good business men in politics are shaping public opinion and helping to revise and improve our standards, so that the demand for cleaner methods is becoming more and more imperative.

Business Sense in Politics.

A salesman presents a business proposition to a business man in a businesslike way. And yet the conservative man will stop and think and figure the deal over

carefully, considering it in all its relationships to himself and his business before coming to a decision.

Few men take so much pains in dealing with political propositions. The matter is dismissed or decided without investigation. Petitions are signed for or against measures without knowing the occasion for the petition. Explanations and suggestions are accepted from persons whom we would not trust in a business transaction and from newspapers that are known to be thoroughly unreliable. We do worse things than these. We allow ourselves to be influenced and carried off our feet by the flimsiest sort of clap trap. We don't think.

I will venture the assertion that any Hardwareman when he hires a clerk for his business makes a careful investigation as to his character, ability, honesty and fitness for the place. Trifling things that you might criticize are overlooked in the interest of efficient service that may come to you and your business. If he fills the bill as to honesty, ability, &c., you hire him.

People as a rule apply no such methods in selecting and supporting men for office even in their own party. Little or no investigation is made. Character and ability count for little as against "our faction" or some trifling personal misunderstanding or difference of opinion. They do not use business sense in these matters.

Business Men Beneficial to the Service.

We all notice, whether we have to do with public affairs or not, the improvement in the public service when managed by level headed business men. The finances are in better shape, economies are practiced, taxes are less. The protection is better. Property is worth more and every interest has a square deal. Such conditions are a better advertisement to attract capital and desirable citizens to a town than promises of bonuses and exemptions from city burdens for a term of years.

Similar improvements will be obtained in the management of our cities when the right kind of men are placed in charge of their affairs. Municipal government has been characterized as "America's conspicuous failure." The mismanagement, graft, corruption and lawlessness of our cities have a close relationship with the selfish greed of dishonest corporate and private enterprises.

In legislation I have noticed that business men and farmers are more conservative than professional men in the matter of appropriations. A large percentage of the questions and bills up for consideration are commercial in their nature. I think that business men understand the "stories the figures tell" better than can those who have had no business training. The business man is needed in the Legislature as well as the professional man and the farmer, and from the very nature of the business and the peculiar ability required he makes good in many of the State offices.

Politics may not be a good thing for you to engage in from the standpoint of business. But you are interested in the communities in which you live. Your interest and activity in local politics will give character to your home political affairs, and make for better conditions along up the line. You have the ability. You know how to approach men. You know how to organize. You have a standing that will enable you to help mold public opinion. You have the opportunities and opportunities involve responsibilities in these matters.

The State educates its citizenship with two objects in view:

1. That the citizen shall be self-supporting.

2. That the citizen shall be able to return a service of value to the State.

You can render no more valuable service than to help make political affairs as clean and businesslike as your Hardware business, and to help select men for public office with the same care and business sense you use in the selection of men for your employ. In these things we evidence our patriotism as surely as in obeying the law and being a good citizen.

J. R. McLAUGHLIN, who has been connected with the Lisk Mfg. Company for the past 18 years, has accepted the position of general manager of the Atlantic Stamp- ing Company, Rochester, N. Y.

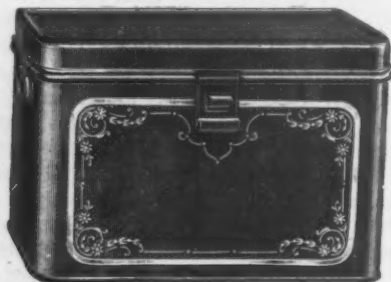
The R. C. Bread Box.

The Republic Metalware Company, Buffalo, N. Y., has recently put on the market the new Bread Box here illustrated. The special features to which attention is called



Atlas Can Cutter.

are the rounded seamless corners and edges, and the seamless one-piece cover. It is japanned in black with gold decoration, and is described as a handsome, stiff and durable box. Because of the method of construction, crumbs, dust, &c., cannot collect in the corners, making it easy to keep sweet and clean, while it has the further sanitary feature of a ventilated back. The cover fits down snug and tight on a large bead around the body so

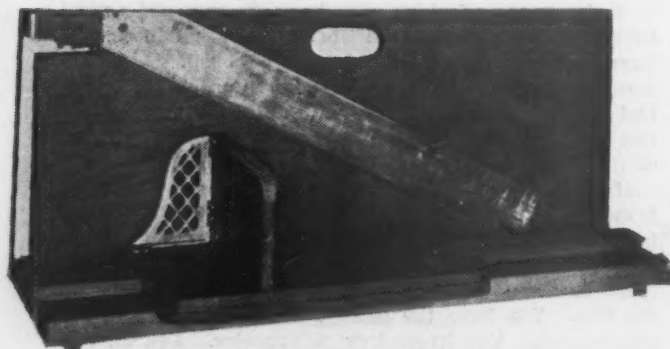


The R. C. Bread Box.

that small insects cannot get inside. Three sizes are stocked: No. 112, measuring 11 x 13 $\frac{5}{8}$ x 9 $\frac{1}{2}$ in.; No. 113, 12 x 17 x 11 $\frac{1}{2}$ in., and No. 115, 14 x 19 $\frac{1}{2}$ x 13 in.

The Gem Slicing Machine.

The slicing machine shown herewith is made of hardwood with nickelplated castings and screws, and the construction and finish is represented as being of the highest grade. The slicer is designed to take the place of the bread knife, cutting every slice the exact thickness



The Gem Slicing Machine.

wanted, thus obviating much labor, especially when making sandwiches. In addition, it will slice almost everything that is sliced with a knife, including ham, bacon, cabbage, pineapples, cheese, cake and vegetables. The device is offered by the Horton & Link Mfg. Company, Herkimer, N. Y.

Atlas Can Cutter.

The Household Necessities Mfg. Company, Philadelphia, Pa., is putting on the market the can cutter illustrated herewith. Instead of cutting a hole out of the top of the can, as do many of the can openers offered for this purpose, this opener cuts the whole top off the can. The operation is described as a simple one, requiring no adjusting for any size can other than the mere moving of the handle. The directions for use are as follows: First remove the label from the can; then insert the

point of the cutter in the center of the top, pushing it down as far as it will go. The handle should then be pulled down to a horizontal position and a firm hold taken with one hand, while the other is placed on the top of the can. The point of the knife is then pushed

into the wall of the can a little to the left of the seam, after which by pulling the handle the can is cut around until the seam is reached, thus completely severing the top from the can. It is explained that the cutter may also be used as an ice pick by sticking the point of the cutter in the ice and pounding down with the handle until the ice is cracked.

C-B Combination Hose Reel Truck, Drainer and Lawn Sprinkler.

William Jasperson, St. Mary's, Ohio, is putting on the market the new form of hose reel shown in the accompanying illustrations. It is substantially constructed of cast iron, malleable iron and brass, and is described as exceptionally strong and durable. It is made in sizes accommodating $\frac{1}{2}$ or $\frac{3}{4}$ in. hose, and stands 40 in. high to the top of the sprinkler head, which will be observed on the end of the pipe, forming the main axis of the reel. The diameter of the reel itself is 14 in. When reeling or unreeling hose the device is turned down into a horizontal position resting on the wheels at one end and at



Fig. 1.—C-B Combination Hose Reel Truck and Sprinkler.

Fig. 2.—Hose Truck with Hose on Reel in Upright Position for Draining.

the other on the brace, which will be observed projecting to the right above the reel. A rack and small cam not shown in the cut keep the reel from revolving in more than one direction. The leading feature to which attention is called by the manufacturer is that after the hose has been reeled up and the reel is again placed in the vertical position, as shown in Fig. 2, the hose is completely drained by the natural force of gravity, thus add-

ing materially to the life of any grade of hose. The device may be used as a lawn sprinkler by attaching the hose to the base by means of a union hose coupling which is provided. The head may be fitted either with the Blake sprinkler head or the two-arm device shown, which is said to throw an excellent spray. Under the base, in addition to the wheels, is a shoe, which enables one to drag the reel over the lawn by pulling the hose while the sprinkler is in operation. The sprinkler head forms a handle by which the device may be inclined at a slight angle and trundled around on the wheels like an ordinary truck. Being only 16 in. in extreme width, the truck does not require much storage space when not in use.

The Excelsior Cylinder Washing Machine No. 31.

The lever attachment high speed cylinder washer shown in Fig. 1 is put on the market by Wayne Mfg.



Fig. 1.—The Excelsior Cylinder Washing Machine No. 31.

Company, St. Louis, Mo. The ends and sides of the tub are made of selected, thoroughly seasoned and kiln dried lumber. The bottom is of heavily galvanized iron. The interior parts of the machine are illustrated in Fig. 2.



Fig. 2.—The Washer Open, Displaying Interior Parts and Closure Scheme of Lid.

The cylinder is constructed of 1-in molding, to form a perfect washboard, and the water is let in and forced out between the rubbers. Four cleats in the cylinder, run-

ning lengthwise, act as agitators, throwing the water against the clothes as they revolve in an opposite direction, to wash away all dirt that has been brought to the surface by the washboard arrangement of the cylinder. The cylinder is heavily bound by galvanized iron strips, and the lid is constantly removable. The cleats that hold the rubbers, forming the cylinder lid, are extended to fit the end rubber of the main cylinder. The lid is fastened

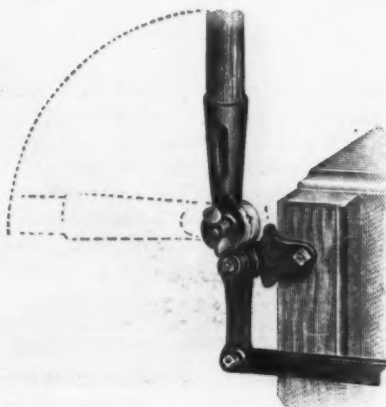


Fig. 3.—Handle Socket and Adjusting Device.

by a patent lock and counter lock, both being moved with ease, but absolutely holding the lid when placed in proper position. All gearing is placed on the inside of the tub, which is referred to as being very simple, avoiding injury to children or adults. All metal parts inside the tub are heavily galvanized. As shown in Fig. 3, the lever handle can be placed at any angle desired by the operator. It is stated that the adjustable feature of the handle is peculiar only to this washer, and that the machine works nearly as easily with a load as without. The washer is well finished in natural wood, covered by two heavy coats of best varnish. All outside castings are finished in gold bronze, while the wheel is painted either red or green. The legs are made of heavy oak, substantially bolted to the machine. The inside dimensions of the tub are $21\frac{1}{8} \times 18\frac{1}{2} \times 20$ in., the size of the cylinder is $17\frac{1}{4} \times 15$ in., having a capacity of about seven shirts; and the quantity of water needed is from three to four buckets. The net weight of the washer, crated, is 110 lb.

Dunne's Mitre Draw Clamp and Cutter.

The combination draw clamp and cutter here illustrated has just been put on the market by the Burgess-Norton Mfg. Company, Geneva, Ill. It is fitted with

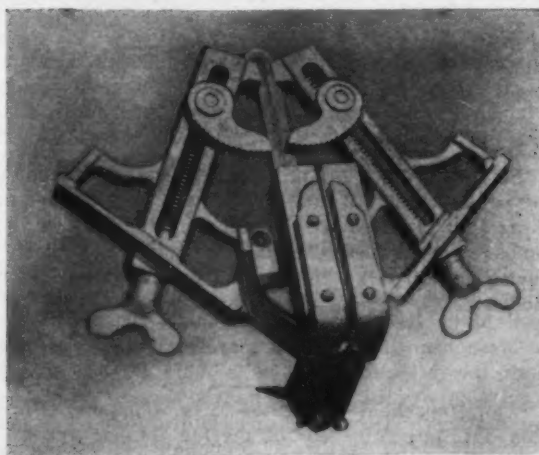


Fig. 1.—Dunne's Mitre Draw Clamp with Saw Guide in Position.

lead screws and dogs, by means of which the work is firmly clamped and held in position. The clamp will accommodate and hold molding of any size or shape, and it is stated that after cutting the miters no shooting or

planing of ends is necessary to make a finished job. Fig. 1 shows the tool with the adjustable saw guide in position, while in Fig. 2 it is removed to clamp and hold together the mitered ends of molding for nailing. Fig. 3 illustrates its use as a miter cutter. In operation the clamp is firmly screwed to a bench or table, or it may be

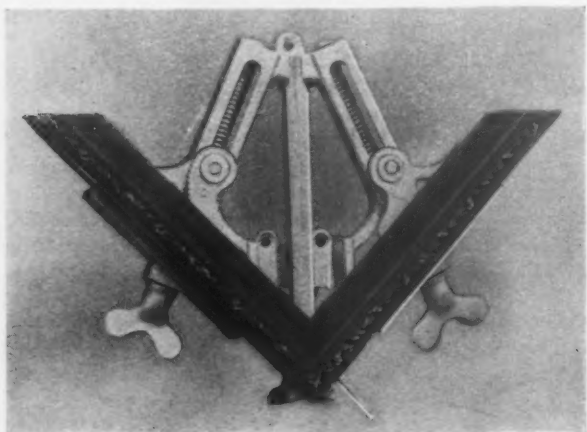


Fig. 2.—Draw Clamp with Saw Guide Removed, Holding Mitered Ends for Nailing.

held in a vise by the projecting lip of the clamp; the saw guide is then attached with a thumb screw and the molding pushed up snugly against the front of the clamp, where it is securely fastened by the clamp screws. After the miters are cut and the saw guide removed the moldings are fitted in the clamp to be joined as shown in Fig. 2. The back of the clamp acts both as a guide rest and stop in cutting the miter, and it is stated that the



Fig. 3.—Draw Clamp Used as a Miter Cutter.

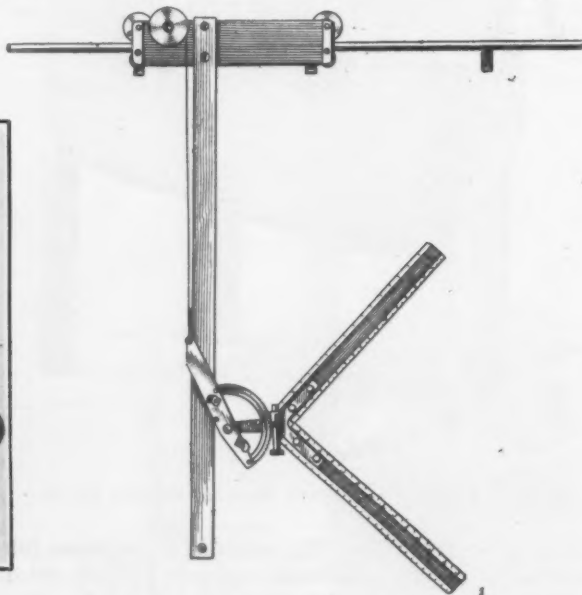
guide can be adjusted to prevent any side movement of the saw, thus assuring a true cut. The extreme simplicity of the tool, together with its efficiency and accuracy, are claimed as its distinctive features.

The Shamrock Enameled Ware.

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., has lately put on the market a full line of high quality enameled ware under the name of "Shamrock." As might be inferred from the name, the color of the ware is a beautifully blended green, in light and dark shades, the inside of the utensils being finished in white. As customary with the company's special brands, the ware is offered with a label of elegant design, the special feature of which is the reproduction of a shamrock. The label provides for the noting of size and selling price. In packing the ware the utmost care is exercised to insure safe carriage, all pieces being separately wrapped and sealed. The company issues a circular giving suggestions as to effective show window display of the ware, and is also ready to furnish an advertising outfit to the merchant, including curtain sign or banner, lapel buttons and post card.

The Noyes Vertical T Square.

The Emmert Mfg. Company, Waynesboro, Pa., is offering the drafting instrument shown herewith. It comprises a vertically arranged T square, having a protractor with scales sliding vertically on it. The head of the T square is provided with a set of four rollers, guided upon a straight steel track, which is to be fastened to the top of a drawing board. One pair of the rollers is beveled and run on ball bearings, arranged so that the weight of the head will hold it upon the track without lost motion, and making possible a free and sensitive movement. The head also carries a spring balanced drum to which is attached a cord connecting with the vertically sliding protractor and holding the latter to the blade. The protractor is also guided upon the blade by rollers to give a more sensitive movement. Thus it is evident that the instrument moves in horizontal and vertical parallel lines. Pivoted to the sliding protractor is a forked arm, to which are attached interchangeable scales. The arm is provided with a worm, which engages notches cut in the rim of the protractor, and which can be quickly pressed out of engagement therewith. The notches are spaced three degrees apart, making possible an instantaneous setting of the instrument to any multiple of three degrees, which includes all the most commonly used angles—0, 15, 30, 45, 60, 75 and 90. The three-degree angle is convenient, as it is the usual draft given to patterns, being suitable for the conventional angle used for showing screw threads and various other



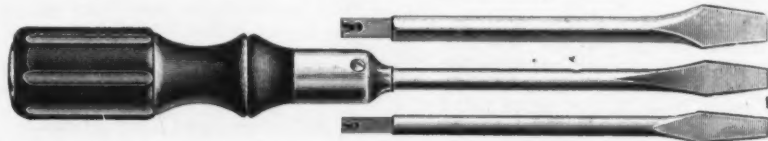
The Noyes Vertical T Square.

cases. To obtain fine adjustment, the neck of the worm is graduated with 12 divisions, so that one division represents one-quarter of a degree. One-half of this, or one-eighth degree, can be easily read, which is as fine as is necessary for drawing. The interchangeable scales are furnished with any desired graduations. In addition to the advantages of the instrument for the horizontal board it is equally well suited for the vertical. It is pointed out that the instrument conserves speed and accuracy in making projections, and combines T square, protractor, scales and triangle into one self-contained whole, depending from the top of the board and eliminating the use of the parallel rule with its inaccuracies. A further extension of the use of the instrument is in making drawings as large as 6 x 10 ft., with the same ease, accuracy and speed as on a 24 x 36 in. board.

Geo. H. Bishop & Co.'s Greyhound Hand Saws.

Geo. H. Bishop & Co., Lawrenceburg, Ind., are making a new line of Hand Saws, which they are introducing under the brand "Greyhound." In naming instead of number-

ing the saw, the firm is departing from its usual custom, and indeed this is said to be the only Bishop Saw which will be designated by a name. The Saw is offered as a strictly high grade tool, and is made from a steel on which the firm has been experimenting for years to secure a fine grain and tough body that could be backed with an absolute guarantee. To these features are added accuracy and evenness of temper, so that the Saws are



Swift-Waters Interchangeable Screw Driver.

declared to cut fast, run easy in all kinds of wood, and hold their sharpness and set for a long time. In workmanship and finish it is claimed that they leave nothing to be desired, and the hang of the blade has been studied and adjusted with the greatest care. Greyhound Saws are made in both straight and skew back, and in 18, 20, 22, 24 and 26 in. lengths. They are packed one in a box.

The Swift-Waters Interchangeable Screw Driver.

The Swift-Waters Mfg. Company, Berlin, Conn., is putting on the market an interchangeable screwdriver, arranged so that either one of three blades may be used, the substitution of one for the other being quickly and easily accomplished. In the center of the handle is a

solid steel bar with a flat disk at its inner end next the blade to prevent heading, which permits the tool to stand severe usage. The blades are of 5-16 in. round stock. As the illustration shows, their ends are squared and recessed to take a spring button, which is governed by an indestructible spring of piano wire. A quick pull removes the blade, disengaging the holding plug.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—		China Clay, Imported, 100 lb.		Blue, Ultramarine.....		Black Drop, English.....	
gal.		ton		13		5	
bbbls.		11.50@12.00		@16		@15	
Linseed, State and Western,	41 @43	Cobalt, Oxide.....	100 lb 1.45@1.60	Brown, Vandyke.....		Black, Ivory.....	
City, Raw.....	43 @44	Whiting, Commercial.....	100 lb 42@52	Green, Chrome.....		Lamp, commercial.....	
Boiled, 16 gal. advance on Raw.	70 @	Gilders.....	100 lb .55@.60	Green, Paris.....		Blue, Celestial.....	
Raw, Calcutta, in bbbls.....	70 @	Ex. Gilders.....	100 lb .60@.65	Sienna, Raw.....		Blue, Chinese.....	
Lard, Prime, Winter.....	75 @78	Putty, Commercial—		Sienna, Burnt.....		Blue, Prussian.....	
Extra No. 1.....	51 @52	100 lb		Umber, Raw.....		Blue, Ultramarine.....	
No. 1.....	49 @50	In bladders.....	1.70 @1.80	Umber, Burnt.....		Brown, Spanish.....	
Cotton-seed, Crude, f.o.b. mill.....	29 @30	In bbbls. or tubs.....	1.20 @1.45	White and Red, Lead &c.—		Carmine, No. 40.....	
Summer Yellow, prime.....	38 @39	In 1 lb to 5 lb cans.....	2.65 @2.95	Lead, English white in Oil.....		Green, Chrome, ordinary.....	
Summer White.....	41 @42	In 12 1/2 to 50 lb cans.....	1.80 @1.90	Lead, American White:		Green, Chrome, pure.....	
Yellow Winter.....	45 @47	Spirits Turpentine—		Dry and in Oil, 100, 250 and		Ocher, American.....	
Tallow, Acidless.....	60 @61	gal.		500 lb kegs.....		American Golden.....	
Menhaden, Brown, Strained.....	25 @26	In Oil bbbls.....	30 @39	Dry and in Oil, 25 and 50		French.....	
Northern Crude.....	24 @	In machine bbbls.....	30 @39	lb kegs.....		Foreign Golden.....	
Southern.....	24 @	Glue—		lb kegs.....		Orange Mineral, English.....	
Light Strained.....	35 @36	Cabinet.....	12 @15	Dry and in Oil, 12 1/2 lb kegs.....		French.....	
Bleached Winter.....	37 @39	Common Bone.....	7 1/2 @9	In Oil, 25 lb tin pails.....		German.....	
Ex. Bleached Winter.....	39 @41	Extra White.....	18 @24	In Oil, 12 1/2 lb tin pails.....		American.....	
Cocanut, Ceylon.....	64 @67	Fish, liquid, 50 gal. bbbls., per gal.	1.20 @1.20	In Oil, 1, 2, 3 and 5 lb tin		Red, Indian, English.....	
Cochin.....	74 @76	Ion.....	1.20 @1.20	cans, ass't.....		American.....	
Cod, Domestic, Prime.....	38 @40	Foot Stock, White.....	12 @14	Red Lead and Litharge:		Red, Turkey, English.....	
Newfoundland.....	40 @42	Foot Stock, Brown.....	9 @11	In 100 lb kegs.....		Red, Tuscan, English.....	
Red, Elaine.....	41 @42	German Common Hide.....	10 @12	In 25 and 50 lb kegs.....		Red, Venetian, Amer.....	
Saponified.....	41 @42	French Hide.....	10 @12	In 12 1/2 lb kegs.....		English.....	
Olive, Yellow.....	30.95 @31.25	Irish.....	10 @12	In lots of less than 500 lbs,		Sienna, Italian, Burnt and	
Neatsfoot, Prime.....	55 @58	Low Grade.....	10 @12	1/2 lb advance over		Powdered.....	
Palm, Lagoon.....	6 1/2 @	Medium White.....	11 @17	above prices of White and		Italian, Raw, Powdered.....	
Mineral Oils—		Gum Shellac—		Lead, American, Terms: On lots of		American, Raw.....	
Black, 29 gravity, 25@30 cold	13 @13 1/2	Bleached, Commercial.....	23 @24	500 lbs and over, 60 days, or 2% for		American Burnt and Pow'd.....	
test.....	13 @13 1/2	Brown Dry.....	23 @24	cash if paid in 15 days from date of		Talc, French.....	
29 gravity, 15 cold test.....	13 1/2 @14	Diamond.....	30 @37	invoice.		American.....	
Summer.....	12 1/2 @13	Fine, Orange.....	34 @35	Zinc, Dry—		Terra Alba, French.....	
Cylinder, light filtered.....	20 1/2 @21	A. C. Garnet.....	27 @28	American, dry.....		English.....	
Dark, filtered.....	18 @19	G. A. L.....	20 @21	Red Seal (French process).....		American.....	
Paraffine, 903-907 sp. gravity.....	14 1/2 @15	Kala Button.....	18 @19	Green Seal.....		American.....	
903 sp. gravity.....	13 1/2 @14	D. O.....	25 @26	German Red Seal (French		Umber, T'key, Bnt. & Pow'd.....	
903 sp. gravity.....	11 @11 1/2	Octagon B.....	25 @26	process).....		Turkey, Raw and Powdered.....	
Red.....	13 1/2 @14	T. N.....	25 @26	Green Seal.....		Burnt, American.....	
Miscellaneous—		V. S. O.....	27 @27	White Seal.....		Raw, American.....	
Barites:		Colors in Oil—		French, Red Seal.....		Yellow, Chrome, Pure.....	
White, Foreign.....	10 ton \$18.50@20.50	Black, Lampblack.....	12 @14	Green Seal.....		Vermilion, American Lead.....	
Amer. floated.....	10 ton 17.00@18.00	Blue, Chinese.....	36 @46	Dry Colors—		Quicksilver, bulk.....	
Off color.....	10 ton 12.50@15.00	Blue, Prussian.....	32 @36	Black, Carbon.....		Quicksilver, bags.....	
Chalk, in bulk.....	10 ton 3.00@3.40			Black Drop, American.....		English, Imported.....	
						Chinese.....	

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33½ @ 33½ & 10% signifies

that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33½%
North's.....10%
Upson's Patent, ½ gro., \$2.50.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Ives' Stop Bead Screws and Washers.....10%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ½ doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 3, \$1.00; 5, \$0.50.
Fernald Quick Shifter, ½ doz. pairs.....\$2.00@3.00

Anvils—American—

Eagle Anvils.....½ lb. @ 8¢
Hay-Budden, Wrought.....½ lb. @ 9¢
Trenton.....½ lb. @ 9¢

Imported—

Swedish Solid Steel Sisco, Superior, ½ lb.10¢@10½¢
Peter Wright & Sons, ½ lb. 84 to 319 lb., 11¢; 350 to 600 lb., 11½¢.

Anvil, Vice and Drill—

Millers Falls Co., \$18.00.....15¢@10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....10%

Augers and Bits—

Com. Double Spur.....75¢@10¢@80%
Jennings' Patn., Bright, 65¢@10¢@70%
Black Lip or Blued.....65¢@65¢
Boring Mach. Augers.....70¢
Car Bits, 12-in. twist.....40¢@10%
Ford's Auger and Car Bits.....40¢
Fl. Washington Auger Co., Concord's.....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.....25¢
No. 30, R. Jennings' list.....50%
Russell Jennings.....25¢@10¢
L'Hommiedien Car Bits.....15%
Mayhew's Countersink Bits.....15%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's.....65¢@10¢@70%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's Pattern, No. 1, ½ doz., \$20; No. 2, \$18.....60¢@10%
Ford's, Clark's Pattern.....60¢@10%
C. E. Jennings & Co., Steer's Pat. 25%
Lavigne Pat., small size, \$18.00; large size, \$25.00.....60¢@10%
Swan's.....60%

Gimlet Bits—

Common Dbl. Out.....\$3.00@3.25
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00
Ames.....20¢@10%
Universal.....20%

Ship Augers and Bits—

Ship Augers.....40¢@10¢
Ford's.....33¢@5%
C. E. Jennings & Co.:
L'Hommiedien's.....6%
Watrons'.....33½¢@7%
Snell's.....48%

Awl Hfts—See Handles, Mechanics' Tool.

Awls—

Brad Awls:
Handled.....gro. \$2.75@3.00
Unhlded, Shldered.....gro. 65¢@66¢
Unhlded, Patent.....gro. 60¢@70¢
Peg Awls:
Unhlded, Patent.....gro. 31¢@31¢
Unhlded, Shldered.....gro. 65¢@70¢
Scratch Awls:
Handled, Com.....gro. \$3.50@4.00
Handled, Sochet.....gro. \$11.50@12.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.
First Quality.....\$4.75@5.00
Second Quality.....\$4.25@4.50
Double Bit, base weights:
First Quality.....\$7.00@7.50
Second Quality.....\$6.50@6.75

Axle Grease—

See Grease, Axle.

Axles—

Concord, Loose Collar.....4¼¢@4½¢
Concord, Solid Collar.....4¼¢@5¢
No. 1 Common, Loose.....3¼¢@4¢
No. 1½ Com., New Style.....4¼¢@4½¢
No. 2 Solid Collar.....4¼¢@4½¢
Half Patent:
Nos. 7, 8, 11 and 12.....70%
Nos. 13 to 14.....70%
Nos. 15 to 18.....70¢@10¢@70¢@10¢
Nos. 19 to 22.....70¢@10¢@70¢@10¢

Boxes, Axles—

Common and Concord, not turned.....lb., 5¢@6¢
Common and Concord, turned, lb., 6¢@7¢
Half Patent.....lb., 9¢@10¢

Bait—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....25¢@5%

Balances—

Caldwell new list.....50¢@10%
Pulman.....50¢@10%

Spring—

Light Spring Balances, 60¢@60¢
Chatillon's:
Light Spg. Balances.....50¢@50¢@10%
Straight Balances.....40¢@40¢@10%
Circular Balances.....30%
Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars—

Steel Crowbars, 10 to 40 lb., per lb., 2¼¢@2½¢

Towel—

No. 10 Ideal, Nickel Plate.....½ gro. \$2.50

Beam, Scale—

Scale Beams.....40%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ½ doz., \$0.80; Tinned.....\$0.85
No. 11 Wire Coppered ½ doz., \$1.15; Tinned.....\$1.20
No. 10 Wire Tinned.....½ doz., \$1.50

Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, \$7.50; No. 2, Family Size, \$7.50; No. 3, Extra Family Size, \$21.00; No. 4, Hotel Size, \$30.00.

Holt-Lyon Co.: No. 5, Jap'd, \$0.80; No. 6, Jap'd, \$1.15; No. 7, Jap'd, \$1.65; No. 8, Jap'd, \$2.15; No. 9, Jap'd, \$2.65; No. 10, Jap'd, \$3.15.

Taplin Mfg. Co.: Improved Dover, per gro., No. 60, \$4.00; No. 75, \$4.50; No. 100, \$7.00; No. 102, Tind'd, \$8.50; No. 152, Hotel Tind'd, \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tind'd, \$9.50; No. 300, Mammoth, per doz., \$25.00.

Bellows—

Blacksmith, Standard List:
Split Leather.....60¢@10¢@65%
Grain Leather.....50¢@50¢@10%

Hand—

Inch.....6 7 8 9 10
Doz. \$5.00 5.50 6.00 6.50 7.50

Molders—

Inch.....10 12 14 16
Doz. \$7.50 9.00 12.00 15.00

Bells—

Wrought Cow Bells.....75%
Jersey.....75¢@10%
Texas Star.....50%

Door—

Home, R. & E. Mfg. Co.'s.....55¢@10%

Hand—

Polished, Brass.....60¢@60¢@10%
White Metal.....60¢@60¢@10%
Nickel Plated.....50¢@10%
Stainless.....50¢@10%
Cone's Globe Hand Bell.....33½¢@35%

Miscellaneous—

Farm Bells.....lb., 2¼¢@2½¢
Church and School.....60¢@60¢@10%

Belting—

First Quality, Ex. Hy., Strictly Short Lap.....60¢@10%
Standard.....70¢@10¢@70¢@10¢
Light Double.....75¢@10%
Cut Leather Lacing.....50%
Leather Lacing Sides, per sq. ft., 23¢@24¢

Rubber—

Competition (Low Grade).....70¢@10¢@75%
Standard.....60¢@10¢@70%
Best Grades.....40¢@50%

Bench Stops—

See Stops, Bench

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....10%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks Tackle—

Common Wooden.....75¢@75¢
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50¢@10%
Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50¢@10%
Wire Rope Snatch, 50%
Lane's Patent Automatic Lock and Junior.....30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....55%
Embossed.....55%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....33½¢@10%

Bolts

Carriage, Machine, &c.—Common Carriage (cut thread):
¾ & 6 and smaller.....75¢@60%
Larger and longer.....70¢@50%
Phila. Eagle, \$3.00 list.....80¢
Roll Ends.....70¢@10¢
Machine (Cut Thread):
¾ & 4 and smaller.....75¢@10¢
Larger and longer.....70¢@10¢

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knobs:
Inch.....3 4 5 6 8
Per doz. \$0.30 35 45 60 80
Cast Iron Spring Foot, Jap'd:
Inch.....6 8 10
Per doz. \$1.20 1.50 2.25
Cast Iron Chain, Flat, Japanned:
Inch.....6 8 10
Per doz. \$1.00 1.40 1.65
Cast Iron Flat Shutter, Jap'd, Brass Knobs:
Inch.....6 8 10
Per doz. \$0.75 95 1.25
Wrought Barrel Japanned:
80¢@10¢@80¢@10¢
Barrel Bronzed.....60¢@10%
Spring.....70¢@10¢@70¢@10%
Shutter.....50¢@50¢@10¢
Square Neck.....75¢@75¢
Square.....70¢@10¢@10¢@10%
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

Expansion—

F. H. Evans' Crescent.....40¢@60%
Richards Mfg. Co.....55¢@10%
Star Expansion Bolt Co.:
Star, Lag Screw Type, 60¢@10¢@5¢@24¢
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge.....60%

Star, Machine, Double Wedge.....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single.....55%
Lag Screw.....66%

Plow and Stove—

Plow.....65¢@70%
Stove.....85¢@85¢

Tire—

Common Iron.....80%
Norway Iron.....80%
American Screw Co.:
Norway Phila., list Oct. 16, '94.....80%
Eagle Phila., list Oct. 16, '94.....82½%
Bay State, list Dec. 28, '90.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '94.....80%
Eagle Phila., list Oct. 16, '94.....82½%
Eclipse, list Dec. 28, '90.....80%
Russell Burdall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '90.....80%
Norway Phila., list Oct. 16, '94.....82½%
Eagle.....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '90.....80%
Phila., Eagle, list Oct. 16, 1881.....82½%
Upon Nut Co.:
Tire Bolts.....72½%

Borers, Bung—

Borers Bung, Ring, with Handle:
Inch.....1¼ 1½ 1¾ 2
Per doz. \$4.80 5.60 6.40 8.00
Inch.....2¼ 2½ 2¾ 3
Per doz. \$8.65 11.50

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20¢@10%; Langdon Acme.....15¢@10%
Perfection.....40%
Seavey.....45%

Braces—

Common Ball, American.....\$1.50
Barber's.....50¢@10¢@60¢@10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 208, 611.....50%
C. E. Jennings & Co.....50¢
Mayhew's Ratchet.....50%
Mayhew's Quick Action Hay Pat. 50%
Millers Falls Drill Braces.....25¢@10%
P., S. & W. Co., Peck's Pat.....60¢@10%

Brackets—

Wrought Steel.....75¢@10¢@80%
Bradley Metal Clamp, 50¢@10¢@10¢
Griffin's Pressed Steel.....75¢@75¢@10%
Griffin's Folding Brackets.....70¢@10%
Taplin Victor Handy Egg Beater Bracket.....½ doz., \$1.50

Bright Wire Goods—

See Wire and Wire Goods.

Broilers—

Kilbourne Mfg. Co.....75¢@20%
Wire Goods Co.....75%

Buckets, Galvanized—

Mfr's list, price per gross:
Quart.....10 12 14
Water, Reg.....26.85 29.50 33.50
Water, Hvy.....45.35 48.00 52.00
Fire, Rd. Btm.....32.00 34.65 38.65
Well.....37.35 41.35 45.35

Bull Rings—See Rings, Bull.

Butts—

Wrought, High Lat, Oct. 16, '06, 65%
Cast Brass, Tiebout's.....40¢@10%

Cast Iron—

Fast Joint, Broad.....40¢@10¢@50%
Fast Joint, Narrow.....40¢@10¢@50%
Loose Joint.....70¢@10¢@75%
Loose Pin.....70¢@10¢@75%
Mayer's Hinge.....70¢@70¢
Parliament Bt.....70¢@70¢

Wrought Steel—

Bright:
Light Narrow, Light Reversible.....70¢@5%
Reversible and Broad, 70¢@5%
Loose Joint, Narrow, Light Inside Blind, &c.....70%
Back Flaps, Table Chest, 65% Japanned.

Light Narrow, Loose Pin.

Light Narrow, Ball Tip, 60%
Broad.....40¢@5%
Steeple Tinned.....70%
Ball Tipped.....70%

Extra, 10¢

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900
Hendryx Bronze: Series 700, 800, 30%
Hendryx Enamelled.....35%

Calipers—See Compasses.**Calks, Toe and Heel—**

Blunt, 1 prong, per 100 lb., \$3.50 @ \$3.85
Sharp, 1 prong, per 100 lb., \$1.00 @ \$1.35

Burke's, 1 pr. Blunt Toe, 3/4¢; 2 pr. Blunt Toe, 4/4¢; 1 pr. Sharp Toe, 4/4¢; 2 pr. Sharp, 4/4¢; Blunt Heel, 4/4¢; Sharp Heel, 4/4¢
Lautier, Blunt, 4/4¢; Sharp, 4/4¢
Perkins, Blunt, 1/2 lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See Openers, Can.

Caps, Percussion—

Eley's E. B.....52¢ @ 55¢
G. D.....per M 3/4¢ @ 35¢
F. L.....per M 40¢ @ 45¢
G. E.....per M 48¢ @ 50¢
Musket.....per M 62¢ @ 65¢

Primers—

Berdan Primers, \$2 per M.....20¢
Primer Shells and Bullets.....15¢ @ 10¢
All other primers per M.....\$1.52 @ 1.60

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

Blank Cartridges:
32 C. F., \$5.50.....10¢ @ 5¢
38 C. F., \$7.00.....10¢ @ 5¢
22 cal. Rim, \$1.50.....10¢ @ 5¢
32 cal. Rim, \$2.75.....10¢ @ 5¢
B. B. Caps, Con. Ball, Siegd. \$1.90
B. B. Caps, Round Ball.....\$1.49
Central Fire.....25¢
Target and Sporting Rifle.....15¢ @ 10¢
Primed Shells and Bullets.....15¢ @ 10¢
Rim Fire, Sporting.....50¢
Rim Fire, Military.....15¢ @ 5¢

Castors—

Bed.....65¢ @ 10¢ @ 70¢
Plate.....60¢ @ 60¢ @ 5¢
Philadelphia.....70¢ @ 1¢ @ 75¢
Acme, Ball Bearing.....35¢
Gem (Roller Bearing).....70¢ @ 10¢ @ 5¢
Steel Gem (Roller Bearing).....45¢
Standard Ball Bearing.....40¢ @ 10¢
Yale (Double Wheel) low list.....40¢ @ 10¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Proof Coil—

American Coil, Straight Link:
3-16 5/8 5-16 3/4 1/2 5/8
\$7.80 5.20 4.25 3.60 3.40 3.20
3/4-1 1 1/4 to 1 1/2 inch.
\$3.10 3.20

In cask lots, deduct 25¢.

German Coil.....70%

German Pattern Coil:
6-0 to 1.....70¢ @ 10¢ @ 5¢
2 and 3.....60¢ @ 10¢ @ 70¢
4, 5 and 6.....50¢ @ 10¢ @ 50¢ @ 10¢

Halter—

Halter Chains.....60¢ @ 5¢ @ 60¢ @ 10¢
German Pattern Halter Chains
list July 24, '97.....60¢ @ 10¢ @ 5¢ @ 70¢
Covert Mfg. Co.....35¢ @ 5%

Halter.....35¢ @ 5%

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6 1/2-6-3, Straight, with ring, \$28.00
6 1/2-6-2, Straight, with ring, \$29.00
6 1/2-8-2, Straight, with ring, \$32.00
6 1/2-10-2, Straight, with ring, \$37.00

NOTE.—Add 2¢ per pair for Hooks

Twist Traces: add per pair for Nos. 2 and 3, 2¢; No. 1, 3¢; No. 0, 1¢ to price of Straight Link.

Eastern Standard Traces, Wag-

on Chain, &c.....60¢ @ 10¢ @ 60¢ @ 10¢ @ 5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60¢ @ 10¢ @ 75¢
Brass.....65¢
Safety and Plumber's Chain.....75¢
Gal. Pump Chain.....1/4 lb. @ 3¢
Bridgeport Chain Co.:
Triumph Dog.....50¢ @ 10¢ @ 60¢
Triumph Dog.....50¢ @ 10¢ @ 60¢
Brown Halter and Coil.....45¢ @ 50¢ @ 55¢
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stal-
lion.....40¢
Oneda Community:
American Halter, Dog and Kennel
Chains.....35¢ @ 2¢ @ 40¢
Niagara Dog Leads and Kennel
Chains.....45¢ @ 50¢ @ 55¢
Wire Goods Co.:
Dog Chain.....70¢
Universal Dbl.-Jointed Chain.....70¢
Chain and Ribbon, Sash—
Oneda Community:
Steel Chain.....60¢
Pullman:
Bronze Chain, 60%; Steel Chain,
Coppered.....60¢ @ 10¢
Sash Chain Attachments, per set, 8¢
Aluminum Sash Ribbon, per 100
ft.....\$2.00 @ 35¢, 00
Sash Ribbon Attachments, per set, 8¢

Chalk—

Carpenters' Blue.....gro., 50¢
Carpenters' Red.....gro., 50¢
Carpenters' White.....gro., 40¢

Checks, Door—

Bardley's.....45¢
Pullman, per gro.....\$24.00
Russwin.....35¢ @ 5%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55¢
Youths' Chests, with Tools.....40¢
Gentlemen's Chests, with Tools.....30¢
Farmers' Carpenters, etc., Chests,
with Tools.....20¢
Machinists' and Pipe Fitters'
Chests, Empty.....45¢
Tool Cabinets.....45¢
C. E. Jennings & Co.'s Machinists'
Tool Chests.....75¢

Chisels—**Socket Framing and Firmer**

Standard List.....80¢ @ 10¢ @ —%
Buck Bros.....30¢
C. E. Jennings & Co.:
Socket Firmer No. 10.....25¢ @ 7 1/2¢
Socket Framing No. 15.....25¢ @ 7 1/2¢
Swan's.....66¢ @ 70¢
L. & J. J. White & Co.....30¢ @ 30¢ @ 5%

Tanged—

Tanged Firmers.....30¢ @ 5¢ @ 35¢
Buck Bros.....30¢
C. E. Jennings & Co. Nos. 191, 181.....25¢
L. & J. J. White Co.....25¢ @ 5%

Cold—

Cold Chisels, good quality.....13¢ @ 15¢
Cold Chisels, fair quality.....11¢ @ 12¢
Cold Chisels, ordinary.....9¢ @ 10¢

Chucks—

Almond Drill Chucks.....35¢
Almond Turret Six-Tool Chuck.....40¢
Beach Pat, each \$8.00.....35¢ @ 45¢
Empire.....25¢
Blacksmith's.....25¢
Jacobs' Drill Chucks.....35¢
Pratt's Positive Drive.....25¢
Skinner Lathe Chucks:
Independent.....35¢
Universal, Reversible Jaws.....35¢
Universal, Com. Style Jaws.....35¢
Combination, Reversible Jaws.....35¢
Combination, Com. Style Jaws.....40¢
Round Body or Box Body, 2 Chuck
Jaws.....25¢
Geared Scroll Chucks.....25¢
Drill Chucks:
New Model, 25%; Geared Pat-
tern, 25%; Skinner Patent.....25¢
Positive Drive.....40¢
Planer Chucks.....45¢
Standard Vises.....30¢
Drill Press Vises.....30¢
Face Plate Jaws.....35¢
Standard Tool Co.:
Improved Drill Chuck.....45¢
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6,
7, 8 and 17, 40%; No. 21.....35¢
Scroll Combinations, Nos. 83 and
84.....30¢
Geared Scroll, Nos. 33, 34 and 35.....25¢
Independent Iron, Nos. 18 and 318.....35¢
Independent Steel, No. 64.....25¢
Union Drill, Nos. 000, 00, 100, 101,
102, 103, 104.....35¢
Union Gear Drill.....25¢
Universal, 11, 12, 16, 17, 13, 14, 15.....40¢
Universal No. 42.....35¢
Iron Face Plate Jaws, Nos. 28, 30,
48 and 50.....35¢
Steel Face Plate Jaws, Nos. 70 and
72.....30¢
Westcott Patent Chucks:
Lathe Chucks.....50¢
Little Giant Auxiliary Drill.....50¢
Little Giant Double Grip Drill.....50¢
Little Giant Drill, Improved.....50¢
Oneida Drill.....50¢
Scroll Combination Lathe.....50¢
Whitaker Mfg. Co.:
National Drill.....25%

Clamps—

Adjustable Hammers.....20¢ @ 5¢
Carriage Makers, Star, P. S. & W.
Co.....50¢
Besly, Parallel.....33¢ @ 10¢
Myers' Hay Rack.....50¢
Lineman's Swedish Neverturn.....65¢
Wood Workers' Hammers.....40¢ @ 5¢
Saw Clamps, see Vises, Saw Filers

Cleaners, Drain—

Iwan's Champion, Adjustable.....50¢
Iwan's Champion, Stationary.....40¢

Sidewalk—

Star Socket, All Steel, 1/2 doz, \$1.05 net
Star Shank, All Steel, 1/2 doz, \$3.24 net
W. & C. Shank, All Steel, 1/2 doz,
7 1/2 in., \$3.00; 8 in., \$3.25

Cleavers, Butchers—

Foster Bros.....30¢
Fayette T. Plumb.....30¢
L. & J. J. White Co.....30¢

Clippers, Horse and**Sheep—**

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each.....\$10.75
20th Century Horse, each.....\$5.00
Lightning Belt Horse, each.....\$15.00
Chicago Belt Horse, each.....\$20.00
Stewart's Enclosed Gear Roll
Bearing Horse, each.....\$6.75
Stewart's New Model Sheep
Shearing Machine, each.....\$12.75
Stewart's Enclosed Gear Shear-
ing Machine, No. 8, each.....\$9.75

Clips, Axle—

Regular Styles, list July 1, '05,
30¢ @ 80¢ @ 10%

Cloth and Netting, wire

—See Wire, &c.

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene,
Racking, Liquor, Bottling,
&c.....75¢
Compression Bibbs.....70%

Coffee Mills—

See Mills, Coffee.

Colliers, Dog—

Nickel Chain, Walter B. Stevens &
Son's list.....40¢
Leather, Walter B. Stevens & Son's
list.....40%

Compasses, Dividers, &c.

Ordinary Goods.....70¢ @ 10¢ @ 75%

Conductor Pipe—

L. C. L. to Dealers:
Gal. Steel. Charcoal. Copper.

Northeastern:
70¢ @ 10% 50¢ @ 10¢ 7 1/2% 50¢ @ 10%

Eastern:
70¢ @ 10% 50¢ @ 10¢ 7 1/2% 50¢ @ 10%

Central:
75¢ @ 5% 60% 50¢ @ 10%

Northwestern:
70¢ @ 2 1/2% 60% 50¢ @ 10%

Western:
70¢ @ 7 1/2% 50¢ @ 12 1/2% 50¢ @ 5%

Tennessee:
70¢ @ 10% 50¢ @ 12 1/2% 50¢ @ 10%

Southern:
70% 50¢ @ 12 1/2% 50¢ @ 5%

Southwestern:
70% 50¢ @ 5% 50¢ @ 5%

Terms, 60 days: 2% cash 10 days. Fac-

tory shipments generally delivered.

See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.: 3 4 6 8

Galvanized, 2¢ @ 1.85 \$2.00 \$2.25 \$2.50 \$3.90

Galvanized, Lined, side handles,
Gal.....2 3 4 6 8

Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15

White Enamelled.....10%

Agate Lined.....10%

Coppers' Tools—

See Tools, Coppers'.

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair
and heavier, 20¢; lighter
than 3 lb. to pair.....22¢

Cord—

Sash—

Braided, Drab.....1b. 35¢

Braided, White, Com., Nos. 8
to 12, 20¢; No. 7, 20¢; No. 6,
21¢. In lots of 12 doz. or
over, 1 cent less per pound.

Cable Laid Italian, lb., No. 18.....37¢

Italian, lb., A, No. 18, 25¢; B, 22¢

Common India.....lb., 11¢ @ 11 1/2¢

Cotton Sash Cord, Twisted.....lb. 20¢

Patent Russia.....lb.....20¢

Cable Laid Russia.....lb.....21¢

India Hemp, Br'd'd.....lb.....21¢

India Hemp, Twisted.....lb. 13¢ @ 14¢

Patent India, Twisted.....lb.....17¢

Pearl Braided, cotton, No. 6, 1/2 lb.
20¢; No. 7, 19¢; Nos. 8 to 12,
19¢. In 12 doz. to 100 doz. lots,
Eddystone, Braided, Nos. 8 to 12,
26¢; 7, 26¢; 6, 27¢.

Harmony Cable Laid Italian, Nos. 7
to 10.....1b 23¢

Wire Sash Cord.....10%

Sash Cord Attachments, per 100.....\$2.00

Samson, Nos. 8 to 12:

Braided, 1/2 lb. Drab Cotton,
55¢; Italian Hemp, 40¢ @

50¢; Linen, 65¢; White Cot-
ton, 50¢; Spot Cord.....50¢

Massachusetts, White, 1/2 lb. 40¢

Massachusetts, Drab, 1/2 lb. 45¢

Phoenix, White, Nos. 8 to 12.....27¢

Silver Lake, per lb.:
A. Drab, 45¢; A. White, 40¢;
B. Drab, 40¢; B. White, 35¢;
Italian Hemp, 40¢; Linen.....57¢ @

See also Chain and Ribbon.

Wire, Picture—

Full Length.....90¢ @ —%

Short Length.....90¢ @ 20¢ @ —%

Hendryx Standard Wire Picture Cord,
old list, 85¢ @ 10%

Turner & Stanton Co. Wire Picture
Cord.....90%

Cradles—

Grain.....5%

Crayons—

White Round Crayons, Cases, 100
gro., \$8.00, \$8.50, \$9.00 and \$10.00
according to grade.

Zelmer's Lumber.....70¢ gro.

White and Purple, Indelible.....\$7.50

Blue, Red, Green, Yellow and
Terra Cotta, 65¢; Black.....\$4.50

Light Lumber, 5 1/4 in. x 15-16 in.
round, all colors, \$12.00; Indeli-
bles, \$14.00; Blacks.....\$10.00

Genuine Soapstone, Metal Workers',
5 in. x 4 in. Round, \$2.50; 5 in. x
4 in. Square, \$1.75; 5 x 1/2 x 3-16,
\$2.50; 5 x 1 1/4 x 3-16.....\$3.00

Suremark, Black, \$2.25; Blue, Red
and Yellow.....\$2.50

Crooks, Shepherds—

Fort Madison, per doz., Heavy, \$5.50;
Light.....\$5.00

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, 1/2 doz, \$3.50

Star, Eagle, Rogers & Hamilton
and Anchor.....1/2 doz, \$3.00

Wm. Rogers & Son.....1/2 doz, \$2.50

Cutters—

H. H. Mayhew Co.....40%

Red Devil.....60%

B. Mfg. Co.....40%

Woodward.....50%

Meat and Food—

American.....30%

Nos. 401 402 403 404 405 406 407

Each.....\$5 \$7 \$10 \$12 \$25 \$50 \$60

Enterprise:
Nos. 5 10 12 22 32

Each.....\$2 \$3 \$2.75 \$1.50 \$6 25¢ @ 25¢ @ 7 1/2%

No. 20, \$1.50.....10¢ @ 7 1/2%

P. S. & W. Co.:
Ideal.....40¢ @ 10¢ @ 5%

Hales.....60¢ @ 5%

Little Giant.....1/2 doz, 40¢ @ 50%

Nos. 305 310 312 320 322

\$35.00 \$48.00 \$44.00 \$72.00 \$68.00

New Triumph No. 605, 1/2 doz, \$24.00,

40%

Russwin Food, No. 1, \$24.00; No. 2,
\$27.00; 3, \$42.00.....45¢ @ 10¢ @ 10%

Enterprise Beef Shaver.....25¢ @ 30%

Siaw and Kraut—

Henry Disston & Sons:
Siaw and Kraut Cutters.....35%

Corn Graters.....30%

J. M. Mast Mfg. Co.:
Siaw Cutters, 1 Knife.....1/2 doz, \$3.00

Combined Siaw Cutter and Corn
Grater.....1/2 doz, \$4.00

Tobacco—

All Iron, Cheap.....\$1.25 @ 1.50

Enterprise.....25¢ @ 30%

National, 1/2 doz., No. 1, \$21; No. 2,
\$18.....40%

Diggers, Post Hole, &c—

Disston's:
Rapid, 1/2 doz., \$24.00.....25%

Samson, 1/2 doz., \$34.00.....25%

Iwan's Pat. Post Hole and Well
Auger.....40%

Vaughan Pattern Post Hole Augers,
1/2 doz., \$7.00

Perfection Post Hole Diggers, 1/2
doz., \$8.50

10-lb. cans, 7¢ 6¢
 10 in case, 7¢ 6¢
 10-lb. cans, less
 than 10, 10¢ 10¢ 8¢
 Less quantity, 10¢ 10¢ 8¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—
 Ford's Auger Bit Extensions, 40¢5%

Ext. actors, emon Juice—
 —See Squeezers, Lemon.

Fasteners, Blind—
 Zimmerman's Jap'd and Galv., 50 &
 57; Bronze and Plated, 50¢
 Walling's Patent, 50¢
 Upson's Patent, 40¢

Cord and Weight—
 Ives, 10¢ gro., 10¢
 Titan, 10¢ gro., 10¢

Corrugated—
 Acme Corrugated Fasteners, 70¢

Faucets—
 Cork Lined, 40¢10¢60¢
 Metallic Key, Leather Lined, 60¢10¢70¢

Red Cedar, 40¢5¢10¢10¢5¢
Petroleum, 70¢10¢75¢

B. & L. B. Co.: 60¢10¢
Star, 60¢10¢
West Lock, 50¢10¢

John Sommer's Peerless Tin Key, 40¢
John Sommer's Boss Tin Key, 50¢
John Sommer's Victor Mtl. Key, 50¢10¢
John Sommer's Duplex Metal Key, 60¢
John Sommer's Diamond Lock, 40¢
John Sommer's I.X.L. Cork Lined, 50¢
John Sommer's Reliable Cork Lined, 50¢10¢

John Sommer's Chicago Cork Lined, 60¢
John Sommer's O. K. Cork Lined, 50¢
John Sommer's No Brand, Cedar, 50¢
John Sommer's Perfection, Cedar, 40¢

Self Measuring:
 Enterprise, Self Measuring and
 Pump, 10¢ doz., 36¢10¢40¢10¢
 Lane's, 10¢ doz., 36¢10¢40¢10¢
 National Measuring, 10¢ doz., 36¢10¢40¢10¢

Felloe Plates—
 See Plates, Felloe.

Files— Domestic—
 List Nov. 1, 1899.

Best Brands, 70¢10¢75¢10¢
Standard Brands, 75¢10¢80¢
Lower Grade, 75¢10¢10¢80¢10¢
Gold Medal, 70¢
McCaffrey's American, 60¢10¢10¢

Imported—
Stude's Tapers, Stude's List, July
24, '97, 35¢10¢40¢

Fixtures, Fire Door—
 Richards Mfg. Co.:
 Universal, No. 103; Special, No.
 101, 101
 Fusible Link, No. 98, 101
 Expansion Bolts, No. 107, 60¢10¢

Grindstone—
 Net Prices:
 Inch, 15 17 19 21
 Per doz., \$3.60 3.85 4.15 4.65
 Peck, Stow & Wilcox Co.:
 In, 15 17 19 21 24
 \$4.00 4.40 4.75 5.50 6.50
 Reading Hardware Co., 60¢

Fodder Squeezers—
 See Compressors.

Forks—
 NOTE.—Manufacturers are
 selling from the list of September
 1, 1901, but many jobbers are still
 using list of August 1, 1899, or
 selling at net prices.

Iowa Dig-Ezy Potato, 60¢10¢
Victor, Hay, 60¢15¢20¢
Victor, Manure, 60¢
Victor, Header, 60¢
Champion, Hay, 60¢
Champion, Header, 60¢
Champion, Manure, 60¢15¢20¢
Columbia, Hay, 60¢20¢
Columbia, Manure, 70¢
Columbia, Spading, 70¢12¢
Hawkeye Wood Barley, 40¢
W. & C. Potato Digger, 60¢20¢
Acme Hay, 60¢10¢
Acme Manure, 4 time, 60¢10¢5¢
Dakota Header, 60¢20¢
Jackson Steel Barley, 60¢20¢
Kansas Header, 60¢
W. & C. Favorite Wood Barley, 40¢
 Plated.—See Spoons.

Frames— Wood Saw—
 White, 8'x12' Bar, per doz. 75¢10¢
 Red, 8'x12' Bar, per doz. 1.00¢1.25
 Red, Dbl. Brace, per doz. 1.40¢1.50

Freezers, Ice Cream—
 Qt., 1 2 3 4 6
 Each, \$1.25 \$1.60 \$1.90 \$2.20 \$2.50

Fruit and Jelly Presses—
 See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse— Per 1000 Feet.
 Hemp, 3.25
 Cotton, 3.20
 Waterproof Spl. Taped, 3.65
 Waterproof Dbl. Taped, 4.40
 Waterproof Tpl. Taped, 5.15

Gates, Molasses and Oil—
 Stebbins' Pattern, 80¢80¢5%

Gauges—
 Marking, Mortise, &c., 50¢50¢10%
 Chapin-Stephens Co., 50¢50¢10%
 Marking, Mortise, &c., 50¢50¢10%
 Diston's Marking, Mortise, &c., 50¢
 Wire, Brown & Sharpe's, 35¢
 Wire, Morse's, 25¢
 Wire, P. S. & W. Co., 35¢

Gimlets— Single Cut—
 Numbered assort-

ments, per gro.
 Nail, Metal, No. 1, \$2.00; 2, \$2.30
 Spike, Metal, No. 1, \$4.00; 2, \$4.50
 Nail, Wood Handled, No. 1,
 \$2.30; 2, \$2.60

**Spike, Wood Handled, No. 1,
 \$4.30; 2, \$4.60**

Glass, American Window
 See Trade Report.

Glasses, Level—
 Chapin-Stephens Co., 65¢65¢10%

Glue, Liquid Fish—
 Bottles or Cans, with Brush,
 25¢10¢50%

Elwell's, 50¢

Grease, Axle—
 Common Grade, 10-lb. pails, ea.
 \$5; in boxes, 1 doz., 1 lb., \$1.20;
 2 lb., \$2.00

Helmet Hard Oil, 25¢

Griddles, Soapstone—
 Pike Mfg. Co., 35¢35¢10%

Grinders—
 Pike Mfg. Co.:
 Hand and Foot Power, Pyko Nos.
 1, 2, 3; Pyko Primo; Pyko Peer-

**less; Pyko Spiral (foot power), 35¢
 Mower Knife and Tool, \$5.00, 40¢10¢**

**Royal Mfg. Co.:
 Aluminum Grinding Machines, each,
 Nos. 01, \$1.75; 1A, \$2.50; 10,
 \$5.00**

**Aluminum Sickle Grinders, each,
 Nos. 20, \$5.00; 20A, \$6.00; 20A,
 Combined, \$6.50**

**Aluminum Disc Grinders, each,
 \$2.50**

Grindstones—
 Pike Mfg. Co.:
 Improved Family Grindstones, 10
 inch, 10 doz., \$2.00, 35¢

**Richards Mfg. Co. 10 and Cycle,
 Ball Bearing, mounted, 40¢**

Grips, Nipple—
 Perfect Nipple Grips, 40¢10¢2%

Halters and Ties—
 Cow Ties, 65¢65¢10%

**Bridgeport Chain Co.:
 Triumph Coil and Halters, 35¢2½¢40¢**

Brown Coil and Halters, 45¢50¢45¢
Brown Cow Ties, 50¢50¢10¢45¢
Brown Tie Outs, 70¢10¢75¢5¢

**Covert Mfg. Co.:
 Web, 30¢2¢**

Jute Rope, 35¢
Sisal Rope, 20¢
Cotton Rope, 45¢
Hemp Rope, 45¢

**Oneida Community:
 Am. Coil and Halters, 40¢40¢5¢**

Am. Cow Ties, 45¢50¢
Niagara Coil and Halters, 45¢50¢45¢
Niagara Cow Ties, 45¢50¢10¢45¢

Hammers—
Handled Hammers—
 Heller's Machinists, 55¢10¢55¢10¢5%

Heller's Farriers, 40¢50¢40¢10¢5%
**Peck, Stow & Wilcox Co.:
 Crucible Steel, 40¢10¢50¢**

Farriers, 40¢10¢50¢
Riveting, 40¢10¢50¢
Machinists, 60¢65¢
Blacksmiths, 50¢

**Fayette R. Plumb:
 A. E. Nail, 40¢2½¢40¢12½¢**

Eng. and B. S. Hand, 50¢10¢50¢60¢45¢
Machinists' Hammers, 60¢10¢45¢
Rivet and Tinner's, 40¢7½¢40¢12½¢45¢
Victor Magnetic Tack, 10¢ gro., 87¢

Heavy Hammers and
Sledges—
 Under 3 lb., per lb., 50¢... 80¢10%

3 to 5 lb., per lb., 40¢... 80¢10¢10%
Over 5 lb., per lb., 30¢... 80¢10¢10%
Over 5 lb., per lb., 30¢... 80¢10¢10%

Handles—
Agricultural Tool Handles
 Axe, Pick, &c., 60¢10¢60¢10¢45%

Hoe, Rake, &c., 40¢
Fork, Shovel, Spade, &c., 40¢
Long Handles, 40¢
D Handles, 40¢

Cross-Cut Saw Handles—
 Atkins, 40¢
 Champion, 50¢
 Diston's, 50¢

Mechanics' Tool Handles—
 Auger, assorted, 10¢ gro. \$3.00¢\$3.50

Brad Axl., 10¢ gro. \$1.65¢\$1.75
**Chisel Handles, Ass'd, per gro.,
 Tanged Firmer, Apple, \$2.40¢**

\$2.65; Hickory, \$2.15¢\$2.10
Socket Firming, Apple, \$1.75¢
\$1.95; Hickory, 1.60¢1.75
**Socket Framing, Hickory,
 \$1.60¢\$1.75**

File, assorted, 10¢ gro. \$1.30¢\$1.10
**Hammer, Hatchet, &c.,
 60¢10¢60¢10¢65%**

Hand Saw, Varished, doz., 80¢
85¢; Not Varished, 65¢75¢
**Plane Handles:
 Jack, doz., 30¢; Fore, doz., 45¢**

**Chapin-Stephens Co.:
 Carving Tool, 30¢30¢10%**

Chisel, 60¢60¢10%
File and Awl, 60¢60¢10%
Saw and Plane, 30¢30¢10%
Screw Driver, 30¢30¢10%

**Millers Falls Adj. and Ratchet Auger
 Handles, 15¢10%**

**Nicholson Simplicity File Handle,
 10¢ gro. 30¢\$1.50**

**J. L. Osgood:
 Indestructible File and Tool, 10
 gro., No. 1, \$8.00; No. 2, \$8.50;
 No. 3, \$9.00; No. 4, \$9.50; No.
 5, \$10.00, 10¢ lots 10%**

**W. A. Zelnicker Supply Co.:
 Hammer, 12 in., \$2.00;
 14 in., \$2.00; 16 in., \$2.30; 18
 12, \$2.50; 20 in., \$2.70; 22 in.,
 \$3.00; 24 in., \$3.30; 26 in., \$3.50;
 30 in., \$3.80**

**Sledge, 10 doz., oval, 30 in.,
 \$3.80; octagon, 30 in., \$3.80;
 oval, 36 in., \$4.00; octagon,
 36 in., \$4.00**

**Axe, 10 doz., 28 to 34 in., \$5.00;
 36 in., \$5.50**

**Adze, 10 doz., 36 in., \$5.80; 36
 in., \$7.50**

**Pick, 10 doz., R. R., 36 in.,
 \$8.00; coal, 34 in., \$5.80,
 Hatchet, 10 doz., 12 to 14 in.,
 \$2.00**

Hangers—
 NOTE.—Barn Door Hangers are gen-

**erally quoted per pair, without track
 and Parlor Door Hangers per double set
 with track, &c.**

**Chicago Spring Butt Co.:
 Friction, 25¢
 Oscillating, 25¢
 Big Twin, 25¢**

**Chisholm & Moore Mfg. Co.:
 Baggage Car Door, 50¢
 Elevator, 30¢
 Railroad, 50¢**

**Crook & Carrier Mfg. Co.:
 Loose Axle, 60¢10%**

Roller Bearing, 70¢

**Griffin Mfg. Co.:
 Solid Axle, No. 10, \$12.00, 60¢10%**

**Roller Bearing, No. 11, \$15.00,
 60¢10%**

**Roller Bearing, Ex. Hy., No.
 1, \$15.00, 60¢10%**

Bull Dog, \$24.00, 70¢

**Lane Bros. Co.:
 Parlor, Ball Bearing, \$4.00;
 Standard, \$3.15; No. 105, \$2.85;
 New Model, \$2.80; New Cham-**

**pion per set of 4 Hangers, com-
 plete with track, \$2.25**

Barn Door, Standard, 60¢10%
Binged, net \$6.08

Covered, 70¢5%
Special, 70¢5%
Trolley Hangers and track, 50%

**Lawrence Bros.:
 Cleveland, 70¢7½%**

Clipper, No. 75, 60%
Crown, No. 40, 55¢10%

Cyclone, No. 40, net \$6.50
Tandem, No. 50, net \$7.50

New York, 55¢10%
Trolley, No. 30, 10 pair, \$1.25

**McKinney Mfg. Co.:
 Roller Bearing, Nos. 1 and 2, 70%**

Anti-Friction, 60%
Hinged Hangers, King Charm, 60%

**Richards Mfg. Co.:
 Hangers, Nos. 47, 48, 147, 247,
 60¢5%**

Pioneer Wood Track, No. 3, \$2.25
Roller B'r's St'l Track No. 12, \$2.20

Roller B'r's St'l Track No. 13, \$2.50
**Roller B'r's, Nos. 30, 41, 43,
 70¢7½%**

Hero, Adj. Track No. 19, 50¢10%
Adjustable Track Tandem Trol-

ley Track No. 18, 50¢10%
Palace, Steel Track No. 8, \$2.25

Auto Adj. Track No. 22, 50¢5%
**Trolley B. D. No. 17, \$1.25; F.
 D. No. 120, \$2.25; No. 121,
 \$2.45; No. 150, \$2.50**

**Safety Underwriters F. D. No.
 101, 50%**

Tandem No. 41, 2½ and 3 60¢10%
**Palace, Adjustable Track No. 132,
 50¢5%**

**Royal, Adjustable Track No. 122,
 50¢10%**

Ives' Wood Track No. 1, \$2.25
Trolley B. D. No. 20, 50¢10%

**Trolley B. D. No. 24, \$1.30; No.
 25, \$1.40; No. 28, \$1.60**

**Palace Bearings, Nos. 37, 38, 39,
 41, 43, 44, Sizes 1 and 2, 70¢7½%**

**Anti-friction, No. 42; No. 44,
 sizes 2½ and 3, 60%**

Hinged Tandem No. 45, 60¢5%
**Folding Door B. B. Swivel No.
 135, 40%**

**Taylor & Boggs Fy's Kid-
 der's Roller Bearing, 10 doz.,
 4 in., \$12.00; 5 in., \$14.00, 40¢10%**

Myers' Stayon Hangers, 60%

Hangers— Garment—
 Pullman Trouser, 10 gro. No. 1

**\$8.00; No. 4, \$24.00; No. 5, \$16.50;
 No. 6, \$16.50; No. 7, \$16.50;
 No. 8, \$16.50; No. 9, \$16.50;
 No. 10, \$16.50; No. 11, \$16.50;
 No. 12, \$16.50; No. 13, \$16.50;
 No. 14, \$16.50; No. 15, \$16.50;
 No. 16, \$16.50; No. 17, \$16.50;
 No. 18, \$16.50; No. 19, \$16.50;
 No. 20, \$16.50; No. 21, \$16.50;
 No. 22, \$16.50; No. 23, \$16.50;
 No. 24, \$16.50; No. 25, \$16.50;
 No. 26, \$16.50; No. 27, \$16.50;
 No. 28, \$16.50; No. 29, \$16.50;
 No. 30, \$16.50; No. 31, \$16.50;
 No. 32, \$16.50; No. 33, \$16.50;
 No. 34, \$16.50; No. 35, \$16.50;
 No. 36, \$16.50; No. 37, \$16.50;
 No. 38, \$16.50; No. 39, \$16.50;
 No. 40, \$16.50; No. 41, \$16.50;
 No. 42, \$16.50; No. 43, \$16.50;
 No. 44, \$16.50; No. 45, \$16.50;
 No. 46, \$16.50; No. 47, \$16.50;
 No. 48, \$16.50; No. 49, \$16.50;
 No. 50, \$16.50; No. 51, \$16.50;
 No. 52, \$16.50; No. 53, \$16.50;
 No. 54, \$16.50; No. 55, \$16.50;
 No. 56, \$16.50; No. 57, \$16.50;
 No. 58, \$16.50; No. 59, \$16.50;
 No. 60, \$16.50; No. 61, \$16.50;
 No. 62, \$16.50; No. 63, \$16.50;
 No. 64, \$16.50; No. 65, \$16.50;
 No. 66, \$16.50; No. 67, \$16.50;
 No. 68, \$16.50; No. 69, \$16.50;
 No. 70, \$16.50; No. 71, \$16.50;
 No. 72, \$16.50; No. 73, \$16.50;
 No. 74, \$16.50; No. 75, \$16.50;
 No. 76, \$16.50; No. 77, \$16.50;
 No. 78, \$16.50; No. 79, \$16.50;
 No. 80, \$16.50; No. 81, \$16.50;
 No. 82, \$16.50; No. 83, \$16.50;
 No. 84, \$16.50; No. 85, \$16.50;
 No. 86, \$16.50; No. 87, \$16.50;
 No. 88, \$16.50; No. 89, \$16.50;
 No. 90, \$16.50; No. 91, \$16.50;
 No. 92, \$16.50; No. 93, \$16.50;
 No. 94, \$16.50; No. 95, \$16.50;
 No. 96, \$16.50; No. 97, \$16.50;
 No. 98, \$16.50; No. 99, \$16.50;
 No. 100, \$16.50; No. 101, \$16.50;
 No. 102, \$16.50; No. 103, \$16.50;
 No. 104, \$16.50; No. 105, \$16.50;
 No. 106, \$16.50; No. 107, \$16.50;
 No. 108, \$16.50; No. 109, \$16.50;
 No. 110, \$16.50; No. 111, \$16.50;
 No. 112, \$16.50; No. 113, \$16.50;
 No. 114, \$16.50; No. 115, \$16.50;
 No. 116, \$16.50; No. 117, \$16.50;
 No. 118, \$16.50; No. 119, \$16.50;
 No. 120, \$16.50; No. 121, \$16.50;
 No. 122, \$16.50; No. 123, \$16.50;
 No. 124, \$16.50; No. 125, \$16.50;
 No. 126, \$16.50; No. 127, \$**

Hoes— Eye —
Scovill and Oval Pattern,
 60¢10¢@60¢10¢10¢
Grub, list Feb. 23, 1899,
 70¢10¢@70¢10¢10¢
 D. & H. Scovill.....27½¢
 Am. Fork & Hoe Co. (Scovill Pat-
 tern).....60¢

Handled—
NOTE—Manufacturers are selling
from the list of September 1, 1904, but
many jobbers are still using list of
August 1, 1899, or selling at net prices.
 Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
 Star Double Bit.....\$2.50
 Ft. Madison Cotton Hoe.....70¢10¢
 Ft. Madison Crescent Cultivator Hoe,
 ½ doz.....70¢10¢
 Ft. Madison Mattock Hoes:
 Regular Weight.....½ doz. 40¢5¢
 Junior Size.....½ doz. \$4.00
 Ft. Madison Sprouting Hoe, ½ doz.....60¢10¢
 Ft. Madison Dixie Tobacco Hoe.....75¢10¢
 Kretzinger's Cut Easy.....70¢10¢
 Warren Hoe.....45¢10¢
 W. & C. Ivanshoe.....75¢10¢
 B. B. 6 in. Cultivator Hoe.....\$3.40
 B. B. 6½ in. ".....\$3.50
 Acme Weeding.....½ doz. net. \$4.35
 W. & C. L'ning Shuffle Hoe, ½ doz. \$5.25

Hoisting Apparatus—
See Machines, Hoisting.
Holders— Bit—
 Angular, ½ doz. \$24.00.....45¢10¢
Door—
 Bardsley's, Iron, 40%; Brass and
 Bronze.....25¢
 Empire.....50¢
 Pullman.....25¢
 Richards Mfg. Co.: No. 117, Ever-
 ready, 40%; Nos. 118, 119, Sure
 Grip.....50¢
 Superior.....33½¢

File and Tool—
 Nicholson File Holders and File
 Handles.....33½¢40¢

Fruit Jar—
 Triumph Fruit Jar Holder, ½ gross,
 \$18.00; ½ doz.....\$2.00

Trace and Rein—
 Fernald Double Trace Holder, ½ doz.
 pairs.....\$1.25
 Dash Rein Holder, ½ doz.....\$1.25

Hores—Razor—
 Pike Mfg. Co., Belgian and Swat,
 50%; German.....33½¢

Hooks—Cast Iron—
 Bird Cape, Reading.....40¢
 Clothes Line, Reading List.....40¢
 Coat and Hat, Reading.....45¢20¢
 Coat and Hat, Wrightsville.....60¢5¢
 Harness, Reading List.....40¢

Wire—
 Belt, Nos. 1 to 15.....75¢10¢@80¢
 Wire C. & H. Hooks.....80¢90¢10¢
 Bradley Metal Clasp Wire, Coat and
 Hat, 75¢10¢@80¢; Ceiling, 75¢10¢@80¢
 Columbian Hd. Co., Gem.....75¢10¢
 Parker Wire Goods Co., King.....75¢10¢
 Wire Goods Co.:
 Acme, 60¢10¢; Chief, 70¢10¢;
 Crown, 75¢; Czar, 65¢10¢; V
 Brace, 75¢; Czar Harness, 50¢;
 Ceiling, 75¢.

Wrought Iron—
 Box, 6 in., per doz., \$0.90; 8 in.,
 \$1.15.
 Cotton.....doz. \$1.25@1.50
 Wrought Staples, Hooks, &c.,
 See Wrought Goods.

Miscellaneous—
 Hooks, Bench, see Steps, Bench.
 Hush, Light, doz., \$6.20; Medium,
 \$6.75; Heavy, \$7.65
 Grass, best, all sizes, per doz.,
 \$2.75@3.00
 Grass, common grades, all sizes,
 per doz.....\$1.25@1.50
 Whiffletree.....lb. 5¢@6¢

Hooks and Eyes:
 Brass.....60¢10¢10¢
 Malleable Iron.....70¢10¢10¢
 Covert Mfg. Co. Gate and Scuttle
 Hooks.....40¢
 Ft. Madison Cut-Easy Corn Hooks,
 ½ doz.....\$3.25 net

Turner & Stanton Co. Cup and
 Shoulder.....85¢10¢
 Bench Hooks—See Bench Stops.
 Corn Hooks—See Knives, Corn.

Horse Nails—
 See Nails, Horse.

Horseshoes—
 See Shoes, Horses.

Hose, Rubber—
 Garden Hose, ¾-in.:
 Competition.....ft. 6¢@6½¢
 3-ply Guaranteed.....ft. 8½¢@9¢
 4-ply Guaranteed.....ft. 9½¢@12¢
 Cotton Garden, ¾-in., coupled:
 Low Grade.....ft. 8¢@9¢
 Fair Quality.....ft. 10¢@11¢

Irons— Sad—
 From 4 to 10.....lb. 2½¢@2½¢
 R. B. Sad Irons.....lb. 3½¢@3½¢
 Mrs. Potts, cents per set:
 Nos. 50 55 60 65
 Tap'd Caps.....86 93 98 98
 Jin'd Caps.....91 93 101 98
 New England Pressing.....lb. 3½¢@4¢

Bar and Corner—
 Richards Mfg. Co., Bar, 60¢10¢;
 Corner.....60¢

Pinking—
 Pinking Irons.....doz. 60¢@6½¢

Irons, Soldering
 See Coppers.

acks, Wagons—
 Covert Mfg. Co.:
 Auto Screw.....30¢2¢; Steel, 45¢

Lockport.....50¢
 Lane's Steel.....30¢5¢
 Richards' Tiger Steel, No. 130.....50¢10¢
 Smith & Hemenway Co.'s.....25¢

Ladder—
 Richards Mfg. Co., Ladder Jacks.....50¢
Jointers—
 Pike Mfg. Co., Saw Jointers, \$7.00.....40¢

Kettles—
 Brass, Spun, Plain.....20¢25¢
 Enameled and Cast Iron—See Ware,
 Hollow.

Knives—
 Butcher, Kitchen, &c.—
 Foster Bros. Butcher, &c.....30¢
 Wilkinson Shear & Cutlery Co.....60¢

Corn—
 Columbian Cutlery Co., Wilcut
 Brand Knives and Hooks.....60¢
 Withington Acme, ½ doz., \$2.65;
 Dent, \$2.75; Adj. Serrated, \$2.20;
 Serrated, \$2.10; Yankee No. 1, \$1.50;
 Yankee No. 2, \$1.15.

Drawing—
 Standard List.....80¢10¢@—%
 C. E. Jennings & Co., Nos. 45, 46,
 25¢7½¢
 Jennings & Griffin, Nos. 41, 42,
 66¢7½¢
 Swan's.....66¢@70¢
 Watrous.....16½¢
 L. & I. J. White.....20¢5¢25¢

Hay and Straw—
 Serrated Edge, per doz. \$5.00@5.50
 C. E. Jennings & Co., Nos. 45, 46,
 25¢7½¢
 Watrous.....16½¢
 L. & I. J. White.....20¢5¢25¢

Miscellaneous—
 Farriers'.....doz. \$2.60@3.55
 Wostenholm's.....½ doz. \$3.00@3.25

Knobs—
 Base, 2½-in., Birch or Maple,
 Rubber Tip.....gro. \$1.25@1.40
 Carriage, Jap., Drive, all sizes,
 gro. \$5¢@40¢
 Door, Mineral.....doz. 65¢@70¢
 Door, Por. Jap'd.....doz. 70¢@75¢
 Door, Por. Nickel.....doz. \$2.05@2.15
 Bardsley's Wood Door, Shutters, &c. 15¢

Lacing, Leather—
 See Belting, Leather.

Ladders, Store, &c.—
 Lane's Store.....25¢
 Myers' Noiseless Store Ladders.....50¢
 Richards Mfg. Co.:
 Improved Noiseless, No. 112.....50¢
 Climax Shelf, No. 113.....50¢
 Trolley, No. 109.....50¢

Ladles, Melting—
 L. & G. Mfg. Co., Melting and
 Plumbers'.....25¢
 P. S. & W.....40¢10¢
 Reading.....60¢

Lamps—
 Hammer's M. I. Hand.....45¢

Lanterns—Tubular—
 Regular, No. 0.....doz. \$4.35@4.50
 Side Lift, No. 0.....doz. \$4.60@4.75
 Hinge Globe, No. 0.....doz. \$4.60@4.75
 Other Styles.....40¢@40¢10¢

Bull's Eye Police—
 3-inch.....\$3.75@4.00

Latches—Thumb—
 Roggin's Latches, Jap'd, with
 Screws.....doz. 35¢@40¢

Door—
 Cronk & Carrier Mfg. Co., No. 101,
 ½ doz. \$2.00
 Richards' Bull Dog, Heavy, No. 125,
 50¢5¢
 Richards' Trump, No. 127.....\$4.50

Leaders, Cattle—
 Small.....doz. 50¢; large, 60¢
 Covert Mfg. Co.:
 Cotton, 45%; Hemp, 45%; Jute,
 35%; Sisal, 70%.

Leathers, Pump—
 See Pumps—

Lifters, Transom—
 R. & E.....10%

Lines—
 Wire Clothes, Nos. 18 19 20
 100 feet.....\$2.30 1.95 1.75
 75 feet.....\$1.95 1.65 1.50
 Samson Cordage Works:
 Solid Braided Chalk, Nos. 0 to 3, 40%;
 Solid Braided Mases.....30%
 Silver Lake Braided Chalk, No. 0,
 \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,
 \$7.50.
 Mason's Lines, Shade Cord, &c.:
 White Cotton, No. 3½, \$1.50; No. 4,
 \$2.00; No. 4½, \$2.50; Colors, No. 3½,
 \$1.75; No. 4, \$2.25; No. 4½, \$2.75;
 Linen, No. 3½, \$2.50; No. 4, \$3.50;
 No. 4½, \$4.50.
 Tent and Awning Lines: No. 5,
 White Cotton, \$7.50; Drab Cotton,
 \$8.50.
 Clothes Lines, White Cotton: 50 ft.,
 \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
 100 ft., \$5.25.
 Turner & Stanton Co.:
 Solid Braided Chalk, Masons' and
 Awning Lines.....40%
 Clothes Lines, White Cotton.....20%
 Shade Cord, Cotton or Linen.....20%

Locks— Cabinet—
 Cabinet Locks.....33½¢@33½¢@5¢
 Door Locks, Latches, &c.—
NOTE—Net Prices are very often made
on these goods.
 Reading Hardware Co.....40%
 R. & E. Mfg. Co.....10%

Padlocks—
 R. & E. Mfg. Co. Wrought Steel and
 Brass.....75¢10%

Sash, &c.—

Ives' Patent:
 Crescent.....10%
 Automatic Gravity Metal Sash, ½
 gro., \$149.58.....10%
 Window Ventilating.....10%
 Pullman Patent Ventilating Lock.....25%
 Reading Sash Locks.....40%
 Taylor Mfg. Co., Perfect Ventilating,
 ½ doz.....\$0.75@1.00

Machines—Boring—
 Com. Up'r't, without Augers,
 \$2.00@2.25
 Com. Ang'l'r, without Augers,
 \$2.25@2.50

Ford Auger Bit Co.....\$2.00
 Jennings' Nos. 1 and 4.....25¢7½¢
 Millers' Falls.....5.75
 Snell's, Upright, \$2.65; Angular, \$2.90
 Swan's Improved.....40¢10%

Corking—
 Reisinger Invinible Hand Power...
 ½ doz. \$48.00

Fence—
 Williams' Fence Machines.....each. \$5.50

Hoisting—
 Moore's Anti-Friction Chain Hoist.....30%
 Moore's Hand Hoist, with Lock
 Brake.....20%
 Moore's Cyclone High Speed Chain
 Hoist.....25%

Ice Cutting—
 Chandler's.....12½%

Washing
 Boss Washing Machine Co.: Per doz.
 Boss No. 1.....\$57.00
 Boss Rotary.....\$57.00
 Champion Rotary Banner No. 1.....\$57.00
 Standard Champion No. 1.....\$50.00
 Standard Perfection.....\$27.00
 Cincinnati Square Western.....\$33.00
 Uneda American, Round.....\$33.60

Mallets—
 Hickory.....45¢5¢@50¢
 Lignumvite.....45¢5¢@50¢
 Tinnors' Hickory and Apple-
 wood.....doz. 45¢5¢@50¢

Mangers, Stable—
 Sweet Iron Works.....50%

Mats, Door—
 Acme Flexible Steel.....50%
 Elastic Steel (W. G. Co.), new list.....50%

Mattocks—
 See Picks and Mattocks.

Milk Cans—See Cans, Milk.

Mills, Coffee, &c.—
 Enterprise Mfg. Co.:
 Coffee.....20¢25¢
 Shell and Corn.....25¢10¢
 National list Jan. 1, 1902.....30%
 Parker's Columbia and Victoria.....33½¢
 Parker's Box and Side.....50¢10¢
 Swift, Lane Bros. Co.....50%

Motors, Water—
 Divine's Red Devil.....30%
 \$2.50 3.50 10.00 15.00.....33½¢
 No. 1 2 3 4
 Lippincott's:
 No.....1 2 3 4
 \$2.50 3.50 10.00 15.00.....33½¢
 Pike Mfg. Co., Tool and Knife
 Grinding.....33½%

Mowers, Lawn—
NOTE—Net prices are generally quoted
Cheapest, 10-in., \$2.00; advance
40¢ for each size.
 Cheap, 10-in., \$2.25; advance 15¢@
 20¢ for each size.
 Better Grade, 10-in., \$3.00; ad-
 vance 25¢ for each size.

High Grade.....\$4.50 4.75 5.00 5.25
 Continental.....60%
 Great American.....70%
 Great American Ball B'r'g, new list.....70%
 Quaker City.....70%
 Pennsylvania.....60%
 Pennsylvania, Jr., Ball Bearing,
 50¢10¢5¢

Pennsylvania Golf.....50%
 Pennsylvania Horse.....33½¢5¢
 Pennsylvania Pony.....40¢5¢
 Philadelphia:
 Styles M., S. C. K., T.....70¢10¢5¢
 Style A, all Steel.....60¢10¢5¢
 Style E, High Wheel.....70¢10¢5¢
 Drexel and Gold Coin, special list.....40%
 Horse.....40¢5¢
 26-in. Horse.....30¢10¢
 Eagle Horse.....30¢5¢
 I. X. L. Horse.....50%

Nails—
 Wire Nails and Brads, Miscel-
 laneous.....85¢5¢@85¢10%
 Cut and Wire, See Trade Report.

Horse—
 Nos. 6 7 8 9 10
 Anchor.....23 21 20 19 18 .. ½ lb.
 Coleman.....13 12 12 11 11 net 12¢
 New Haven.....23 21 20 19 18 .. ½ lb.
 Livingston.....19 18 17 16 16 .. 10%
 Western.....½ lb. 8½¢
 Jobbers' Special Brands.....per lb. 9¢

Picture—
 Brass Hd. gro. ½ 55 60 70
 Por. Head, gro. .. 1.10 1.10 1.10

Upholsters—
 Brass.....30%
 Plated.....50¢10%

Nippers—
 See Pliers and Nippers.

Nipples—
 Standard Nipple Co.:
 Wrought Pipe Nipples.....80%

Nuts— Blank or Tapped.

Cold Punched: Off list.
 Square.....5.60¢
 Hexagon.....6.21¢
 Square, C. T. & R.....6.00¢
 Hexagon, C. T. & R.....6.80¢
Hot Pressed:
 Square.....6.10¢
 Hexagon.....6.60¢

Oakum—
 Best.....lb. 6½¢
 U. S. Navy.....lb. 6¢
 Navy.....lb. 5¢
 Plumbers' Spun Oakum.....2½¢@3¢

Oil—
 Pike Mfg. Co., Stonoil.....40%

Oil Tanks—See Tanks, Oil.

Oilers—
 Steel, Copper Plated.....75%
 Chase or Paragon:
 Brass and Copper.....50¢10%
 Zinc.....65¢10¢70%
 Railroad.....60¢10¢10%
 Malleable, Hammers' Improved, Nos.
 11, 12 and 13, 10%; Old Pattern,
 Nos. 1, 2, 3, 4, 50%
 American Tube & Stamping Co.:
 Spring Bottom Cans.....70¢10¢10%
 Railroad Oilers, &c.....60¢60¢10%
 Maple City Mfg. Co.:
 Spring Bottom Cans.....70¢10¢10%
 Railroad Oilers, &c.....60¢60¢10%

Openers—Packing Box—
 Hercules, ½ doz., \$24.....30%

Can Openers—
 Per doz.
 Sprague, Iron Handle.....30¢35¢
 Sprague, Wood Handle.....40¢
 Sardine Scissors.....\$1.75@3.00
 Can and Bottle Openers, ½ doz.,
 net: Yankee, \$0.75@0.85; Little
 Gem, \$0.50@0.65; Nifty.....\$0.75

Egg—
 Hartigan Nickel Plate, ½ doz., \$2.00;
 Silver Plate, \$4.00.

Packing—
 Asbestos Packing, Wick and
 Rope, any quantity.....18¢20¢

Rubber—
 (Fair quality goods.)
 Sheet, C. I.....11¢12¢
 Sheet, C. O. S.....11¢12¢
 Sheet, C. B. S.....12¢13¢
 Sheet, Pure Gum.....40¢45¢
 Sheet, Red.....40¢50¢
 Jenkins' '96, ½ lb. 80¢.....25%

Miscellaneous—
 American Packing.....lb. 7¢10¢
 Cotton Packing.....lb. 16¢25¢
 Italian Packing.....lb. 9¢10¢
 Jute.....lb. 40¢44¢
 Russia Packing.....lb. 9¢10¢

Pails, Water, Well, &c.—
 See Buckets.

Paint—
 Dixon's Silica-Graphite, in 1 gal.
 pails and 5 gal. kegs, 25%; pack-
 ages of larger size.....20%

Pans—Dripping—
 Standard List.....70¢10¢@70¢10¢5¢
 Edwards, Royal Blue.....75%

Fry—
 Common Lipped:
 Nos.....1 2 3 4 5
 Per doz.....\$0.75 0.85 0.95 1.15 1.30
 Refrigerator, Galva.....
 Inch.....12 14 16 18
 Per doz.....\$1.75 2.25 2.80 3.15

Paper—Building Paper
 Asbestos.....lb.
 Roll Board or Building Felt,
 6 to 30 lb., per 100 sq. ft., 2½¢
 Roll Board or Building Felt,
 3-32 and ¼ in., 45 to 60 lb.,
 per 100 sq. ft.....3½¢
 Mill Board, Sheet, 40 x 40 in.,
 1-32 to ½ in.....3¢
 Per roll.
 Rosin Sized Sheathing: 500 sq. ft.
 Light weight, 25 lbs. to roll,
 48¢58¢
 Medium weight, 30 lbs. to roll,
 56¢70¢
 Heavy weight, 40 lbs. to roll,
 75¢78¢

Black Water Proof Sheathing,
 500 sq. ft., 1 ply, 65¢; 2 ply,
 85¢; 3 ply, \$1.10; 4 ply, \$1.25.
 Deafening Felt, 9, 6 and ½ sq.
 ft. to lb., ton.....\$53.50
 Red Rope Roofing, 250 sq. ft.
 per roll.....\$1.75

Tarred Paper—
 1 ply (roll 400 sq. ft.), ton,
 \$34.00@38.00
 2 ply, roll 108 sq. ft.....65¢
 3 ply, roll 108 sq. ft.....88¢
 Slater's Felt (roll 500 sq. ft.).....80¢

Sand Paper and Cloth—
 Flint and Emery.....50¢10%
 Garnet Paper and Cloth.....25%

Parers—Apple—
 Goodell Co.:
 Family Bay State.....½ doz. \$15.00
 Improved Bay State.....½ doz. \$36.00
 New Lightning.....½ doz. \$7.00
 Turn Table '98.....½ doz. \$6.00
 White Mountain.....½ doz. \$3.00
 Bonanza Improved.....each \$7.50
 Dandy.....each \$17.00
 Eureka Improved.....each \$20.00
 New Century.....each \$20.00
 Ranger.....each \$30.00

Livingston Nail Co.:	
Daisy	per doz. \$4.00
Little Star	per doz. \$5.00
Rocking Table	per doz. \$6.20
Reading Hardware Co.:	
Advance	per doz. \$4.00
Baldwin	per doz. \$4.00
Reading 72	per doz. \$3.25
Reading 78	per doz. \$6.25

Orange—

Goodell Co., Succs.	each \$20.00
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Potato—

Saratoga	per doz. \$7.00
White Mountain	per doz. \$6.00

Picks and Mattocks—

(List Jan., 1908.)

List	70¢ to 10¢ to 10¢ to 10%
Cronk's Handled Garden Mattock	per doz. \$3.00
	33%

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—

Brass	50¢ to 50¢ to 10%
Iron, list Nov. 11, '85	60¢ to 60¢ to 10%

Pipe, Cast Iron Soil—

Standard, 2-6 in.	70¢ to —%
Extra Heavy, 2-6 in.	75¢ to 10%
Fittings, Standard and Heavy	75¢ to 10% to 80%

Pipe, Merchant—

Consumers, Carloads,	
Steel.	
Bk. Gale. Bk. Gale.	
1/2 and 3/4 in.	50 61
5/8 in.	68 54 66 52
1 in.	70 58 68 56
1 1/4 to 6 in.	74 64 72 62
7 to 12 in.	71 56 69 54

Pipe, Vitrified Sewer—

Standard Pipe and Fittings, 3 to 24 in., J.O.B. factory:	
First-class	87%
Second-class	90%

Pipe, Stove—

Per 100 joints.	
C. L. L. C. L.	
Edwards' Nested:	
5 in., Standard Blue	\$6.25 \$7.25
6 in., Standard Blue	6.75 7.75
7 in., Standard Blue	7.75 8.75
5 in., Royal Blue	7.00 8.00
6 in., Royal Blue	7.50 8.50
7 in., Royal Blue	8.50 9.50
Wheeler Corrugating Co.'s Nested:	
5 in., Uniform Color	\$5.90 \$6.90
6 in., Uniform Color	6.40 7.40
7 in., Uniform Color	7.40 8.40

Planes and Plane Irons—**Wood Planes—**

Bench, first qual.	30¢ to 30¢ to 10%
Bench, second qual.	40¢ to 40¢ to 10%
Molding	25¢ to 25¢ to 10%
Chapin-Stephens Co.:	
Bench, First Quality	30%
Bench, Second Quality	40%
Molding and Miscellaneous	25%
Toy and German	30%
Union	30%

Iron Planes—

Chapin's Iron Planes	60%
Union	60%

Plane Irons—

Wood Bench Plane Irons, list	
Dec. 12, '06	25%
Buck Bros.	30%
Chapin-Stephens Co.	25%
Union	50%
L. & J. White	20¢ to 25%

Planters, Corn, Hand—

Kohler's Eclipse	per doz. \$7.50
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Plates—

Felco Stamping Co.:	
Standard Wrot. Steel Felco Plates	in 100 lb kegs, per 100 lb, 1/4-in. to 1 1/4-in., \$4.00 net; 1 1/4-in. to 2-in., inclusive, \$3.75 net.

Steel Pipe Hook—

Never-Break	75¢ to 10%
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Pliers and Nippers—

Button Pliers	75¢ to 75¢ to 10¢ to 5%
Gas Burners, per doz. 5 in.	\$1.25
Gas pipe, 7 1/2 10 12-in.	\$2.00 \$2.25 \$2.75 \$3.50
Acme Nippers	50¢ to 5%
Cronk & Carrier Mfg. Co.:	
American Button	80%
Improved Button	75¢ to 10%
Cronk's	60%
No. 50 Linemen's	50%
Stub's Pattern	45%
Combination and others	35%
Heller's Farrier's Nippers, Pincers and Tools	40¢ to 40¢ to 10¢ to 5%
P. S. & W. Timmers' Cutting Nippers	40%
Swedish Side, End and Diagonal Cutting Pliers	50%
Utica Drop Forge & Tool Co.:	
Pliers and Nippers, all kinds	40%

Plumbs and Levels—

Chapin-Stephens Co.:	
Plumb and Levels	30¢ to 30¢ to 10%
Chapin's Imp. Brass Cor.	40¢ to 40¢ to 10%
Pocket Levels	30¢ to 30¢ to 10%
Extension Sights	30¢ to 30¢ to 10%
Machinists' Levels	40¢ to 40¢ to 10%
Diston's Plumb and Levels	60¢ to 10%
Diston's Pocket Levels	60¢ to 10%
Stanley's Duler	25%
Woods' Extension	35%

Points, Glaziers—

Bulk and 1-lb. papers	1 lb. 9¢
1/2-lb. papers	1 lb. 9 1/2¢
1/4-lb. papers	1 lb. 10¢

Police Goods—

Manufacturers' Lists	25¢ to 25¢ to 5%
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Polish—Metal, Etc—

Ladd Co.:	
Pumade Liquid	per gro. 1/4 pts. \$12.00; 1 pts. \$20.00; 1 qts. \$40.00;
per doz. 1/4 gals. \$6.35; 1 gal. \$12.00.	
Prestoline Liquid, No. 1 (1/4 pt.)	per doz. \$3.00; No. 2 (1 qt.), \$9.00. 40%
Prestoline Paste	40%
George William Hoffman:	
U. S. Metal Polish Paste, 3 oz. boxes, per doz. 50¢; per gro. \$4.50.	
1/2 lb boxes, per doz. \$1.25; 1 lb boxes, per doz. \$2.25.	
U. S. Liquid, 8 oz. cans, per doz., \$1.25.	
Barkeepers' Friend Metal Polish, per doz., \$1.75.	

Stove—

Black Eagle Benzine Paste, 5 lb cans, per doz. 10¢	
Black Eagle, Liquid, 1/4 pt. cans, per doz. 75¢	
Black Jack Paste, 1/2 lb cans, per gr. \$9.00	
Black Kid Paste, 5 lb can, each, \$0.65	
Ladd's Black Beauty Liquid, per 100 tins	\$5.75
Joseph Dixon, per gr. \$5.75	10%
Dixon's Plumbago	per lb 8¢
Fireside	per gr. \$2.50
Gem, per gr. \$4.50	10%
Japanese	per gr. \$3.50
Jet Black	per gr. \$3.50
Peerless Iron Enamel, 10 lb cans, per doz., \$1.50	

Window Polish—

Benj. P. Forbes:	
Glasbrite, No. 2, gal pails, per doz., \$24.00; each, \$2.50; 1 lb cans, each, \$0.75	
Glasbrite Powder, bbls., per lb. 20¢	

Poppers, Corn—

1 qt. Square	per doz. \$0.80; per gro. \$3.75
1 qt. Round	per doz. \$0.80; per gro. \$3.00
1 1/2 qt. Square	per doz. \$1.20; per gro. \$12.00
2 qt. Square	per doz. \$1.50; per gro. \$15.00

Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, etc.	
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Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢	
1/2 ft. 46¢; 1 ft., 50¢	
Steel Hitching Posts	each \$1.30

Potato Parers—

See Parers, Potato.	
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Pots, Glue—

Enameled	40%
Tinned	30¢ to 10%

Powder—

In Canisters:	
Duck, 1 lb.	each 45¢
Fine Sporting, 1 lb.	each 75¢
Rifle, 1/2 lb.	each 15¢
Rifle, 1 lb.	each 25¢

In Kegs:

1/2-lb. kegs	each \$3.50
25-lb. kegs	each \$4.50
King's Semi-Smokeless:	
Keg (25 lb bulk)	\$6.50
Half Keg (12 1/2 lb bulk)	\$3.50
Quarter Keg (6 1/4 lb bulk)	\$1.90
Case 24 (1 lb cans bulk)	\$8.50
Half case (1 lb cans bulk)	\$4.50
King's Smokeless: Shot Gun, Rifle,	
Keg (25 lb bulk)	\$12.00 \$15.00
Half Keg (12 1/2 lb bulk)	6.25 7.75
Quarter Keg (6 1/4 lb bulk)	3.25 4.00
Case 24 (1 lb cans bulk)	14.00 17.00
Half case 12 (1 lb c. bk.)	7.25 8.75

Presses—

Fruit, Wine and Jelly—	
Enterprise Mfg. Co.	20¢ to 25%

Seal Presses—

Morrill's No. 1, per doz., \$20.00	30%
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Pruning Hooks and Shears

See Shears.	
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Pullers, Nail, Etc.—

Cyclops	50%
Miller's Falls, No. 3, per doz., \$12.00	35¢ to 10%
Morrill's No. 1, Nail Puller, per doz.	\$20.00
Pearson No. 1, Cyclone Spike Puller, each \$30.00	50%
The Scranton Co. Case Lots:	
No. 2B (large)	\$3.50
No. 3B (small)	\$5.00
Smith & Hemenway Co.:	
Diamond B.	70%
Giant	50%
Staple Pullers, Utica and Davison	60%
Taylor Mfg. Co., Sampson Tack, per doz.	\$0.40

Pulleys, Single Wheel—

Inch	1 1/2 1 3/4 2 3
Awning or Tackle,	
doz.	\$0.30 .15 .60 1.05
Hay Fork, Squirrel or Solid Eye,	
doz., 4 in.	\$1.25; 5 in., \$1.55
Inch	2 2 1/4 2 1/2
Hot House, doz.	\$0.65 .85 1.20
Inch	1 1/4 1 1/2 2
Screw, doz.	\$0.16 .19 .23 .30
Inch	1 1/4 2 1/4 2 1/2
Side, doz.	\$0.25 .40 .55 .60
Inch	1 1/4 1 3/4 2 1/2

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1 1/4 and 2 in.	17¢ to 20¢
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Auger Mortise, no Face Plate,

per doz., 1 1/4 and 2 in.	\$0.21¢
Acme, No. 35, 1 1/4 in., 19¢; 2 in., 20 1/2¢	
American Pulley Co.:	
Wrought Steel American Plain Axle	50¢ to 10%
Wrought Steel, Eagle	17¢ to 20¢
Top Notch, Electrically Welded, Nos. 3 and 4	19¢
Common Sense	per doz. 20¢
Fox-All-Steel, Nos. 3 and 4, 2 in.	per doz. 50%
Grand Rapids All Steel Noiseless	50%
Niagara, No. 25, 1 1/4 in., 19¢; 2 in., 20 1/2¢	
No. 26 Troy, 1 1/4 in., 14 1/2¢; 2 in., 16 1/2¢	
Star, No. 25, 1 1/4 in., 19¢; 2 in., 20 1/2¢	
Tackle Blocks—See Blocks.	

Pumps—

Cistern	60%
Pitcher Spout	75¢ to 75¢ to 10%
Wood Pumps, Tubing, &c.	50%
Barnes Dbl. Acting (low list)	45%
Barnes Pitcher Spout	80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.	\$16.00
Daisy Spray Pump	per doz. \$6.50
Flint & Walling's Fast Mail Hand (low list)	50¢ to 5%
Flint & Walling's Fast Mail (low list)	50¢ to 5%
Flint & Walling's Tight Top Pitcher	80%
National Specialty Mfg. Co., Measuring, No. 2, \$6.00; 3, \$5.50	30%
Myers' Pump (low list)	10%
Myers' Pump Pumps	50%
Myers' Spray Pumps	50%

Pump Leathers—

Plunger and Valve Leathers—Per gro.:	
No.	1 2 3 4
	\$5.00 6.00 7.00 8.00
Cup Leathers—Per 100:	
Inch	2 1/2 3 3 1/2 4
	\$5.00 7.00 9.00 12.00

Punches—

Saddlers' or Drive, good, doz. 50¢ to 75¢	
Springs, single tube, good quality	\$1.75
Revolving (4 tubes)	per doz. \$3.50
Bemis & Call Co.'s Cast St'l Drive 50¢	
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, each \$5.00	50%
Niagara Hollow Punches	40%
Niagara Solid Punches	55¢ to 10%
Timmers' Hollow, P. S. & W. Co.	40%
Timmers' Solid, P. S. & W. Co., per doz., \$1.44	40¢ to 10%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron, 2 1/2 to 2 3/4	
Sliding Door, Wrought Brass, 1 1/2 in., 1 lb., 36¢	30%
Cronk's:	
Double Braced Steel Rail, 1/2 ft. 2 1/4	2 1/4
O. N. T. Rail	2 1/4
Griffin's:	
xxx, per 100 ft., 1 x 3-16 in.	\$3.25;
1 1/4 x 3-16 in.	\$3.75.
Hinged Hanger, per 100 ft., 1 x 3-16 in., \$3.50; 1 1/4 x 3-16 in., \$4.00.	
Lane's:	
Hinged Track, per 100 ft.	\$3.45
O. N. T. per 100 ft., 1 in.	\$3.12 1/2;
1 1/4 in., \$3.45; 1 1/2 in., \$4.00.	
Standard, 1 1/4 in.	per 100 ft. \$4.00
Lawrence Bros.:	
1 x 3-16 in., per 100 ft., \$7.50; 1 1/4 x 3-16 in., \$8.75	55¢ to 7 1/2%
Trolley, No. 301, per ft.	9¢
McKinney's:	
Hinged Hanger Track, per ft., 1 1/4	60¢ to 5%
1 x 3-16 Track	55¢ to 7 1/2%
Myers' Stayon Track	60¢ to 5%
Richards Mfg. Co.:	
Common, 1 x 3-16 in., \$3.00; 1 1/4 x 3-16 in., \$3.25; 1 1/2 x 3-16 in., \$3.50.	
Special Hinged Hanger Rail, 60¢ to 10%	
Lag Screw Rail, No. 65	50%
Gate Trolley Track, per ft. No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.	
No. 50	60¢ to 10%
Nos. 61, \$3.00; 62, \$3.25; 63, \$3.50; 64, \$4.00; 65, \$3.25; 66, \$3.50; 67, No. 1, \$3.25; 68, No. 2, \$3.50.	

Rakes—

NOTE—Many goods are sold at net prices.	
Fort Madison Red Head Lawn	\$3.25
Fort Madison Blue Head Lawn	\$2.75

Steel Garden: Champion, per doz., 12-tooth, \$3.75; 14-tooth, \$4.00; 16-tooth, \$4.25; Ideal, per doz., 12-tooth, \$3.00; 14-tooth, \$3.30; 16-tooth, \$3.60.	
Victor, 12-tooth, \$2.25; 14-tooth, \$2.50; 16-tooth, \$2.75.	
Queen City Lawn, per doz., 20 teeth, \$2.85; 24, \$3.00.	net
Anticlog Lawn, per doz., \$4.00	
Malleable Garden, 70¢ to 10%	
Ideal Steel Garden, per doz., 12 teeth, \$15.00; 14, \$16.00; 16, \$18.00	80%
Kohler's:	
Jumbo Lawn, 36-tooth	per doz. \$5.00
Lawn Queen, 28-tooth	per doz. \$2.85
Lawn Queen, 24-tooth	per doz. \$3.00
Paragon, 28-tooth	per doz. \$2.65
Paragon, 24-tooth	per doz. \$2.75
Steel Garden, 14-tooth	per doz. \$2.40
Malleable Garden, 14-tooth, per doz.	\$1.75 to \$2.00

Rasps, Horse—

Disston's	75%
Heller Bros.	70¢ to 70¢ to 10¢ to 5%
Liveright Bros.' Gold Medal	70¢ to 75%
McCaffrey's American Standard	60¢ to 10¢ to 5%
New Nicholson	70¢ to 10¢ to 75%

Razors—

John Engstrom Swedish	95%
Sharp Shaver	60%

Fox Razors, per doz., No. 42, \$24.00; No. 44, \$20.00; No. 82, \$20.00	
Platina, \$36.00.	

Reels, Fishing—

Hendryx:	
M 6, Q 6, A 6, B 6, M 9 1/4, M 16, Q 16, A 16, B 16, 4008, Rubber, Populim, Nickel Populim.....	20%
Aluminum, German Silv., Bronze, 25 1240 124 N, 971 PN.....	20%
3004 N, 06 N, 6 RM, G 9.....	25%
4 N, 6 PN, 24 N, 26 PN.....	20%
2904 P, 33 1/4%; 2904 PN, 33 1/4%; 0924 N, 33 1/4%; 02084 N, 33 1/4%; 002904 PN, 33 1/4%; 802 N, 33 1/4%;	20%
986 PN, 3004 N, 971 PN.....	25%
5009 PN, 5009 N.....	20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....	20%
304 P, 304 PN, 00304 P, 00304 PN, 33 1/4%	20%

Sausage Stuffers or FillersSee *Stuffers or Fillers, Sausage.***Saw Frames—**See *Frames, Saw.***Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

Atkins':
Circular 45%
Band 50@50.10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cuts 40%
Narrow Cross Cuts 50%
Hand, Rip and Panel 35.65%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws 40.10%

Chapin-Stephens Co.:
Turning Saws and Frames 30.30@10%Diamond Saw & Stamping Works:
Sterling Kitchen Saws 30.10@10%Diston's:
Circular, Solid and Ins'ted Tooth 50%

Band, 2 to 18 in. wide 60%

Band, 1/4 to 1 1/2 60%

Crosscuts 45%

Narrow Crosscuts 50%

Mulay, Mill and Drag 45%

Framed Woodsaws 25%

Woodsaw Blades 25%

Woodsaw Rods, Tinned 15%

Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 25%

Hand Saws, Nos. 7, 107, 107 1/2, 3, 1, 0, 0, Combination 30%

Compass, Key Hole 25%

Butcher Saws and Blades 30%

C. E. Jennings & Co.'s:
Back Saws 16%
Butcher Saws 25.7%
Compass and Key Hole Saws 33.7%
Framed Wood Saws 25.7%
Hand Saws 12%
Wood Saw Blades 33.7%Millers Falls:
Butcher Saws 15.10%

Star Saw Blades 15.10%

Massachusetts Saw Works:
Victory Kitchen Saws 40.10@50%

Butcher Saws Blades 35.40%

Peace & Richardson's Hand Saws 30%

Simonds':
Circular Saws 45%

Crescent Ground Cross Cut Saws 30%

One-Man Cross Cuts 40.10%

Gang Mill, Mulay and Drag Saws 45%

Band Saws 50%

Back Saws 35.65@71.2%

Butcher Saws 25.7%

Hand Saws, Bay State Brand 45%

Compass, Key Hole, &c. 25.7%

Wood Saws 40.7%

Wheeler, Madden & Clemon Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%

Diston's:
Concave Blades 25%

Keystone Blades 35%

Hack Saw Frames 30%

Simonds, 25%; The Best, 35%; Culley 30%

C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 40.7%

Hack Saws, Nos. 175, 180, complete, 40.7%

Goodell's Hack Saw Blades 40.10%

Griffin's Hack Saw Frames 35.65@10%

Griffin's Hack Saw Blades 35.65@10%

Star Hack Saws and Blades 15.10%

Sterling Hack Saw Blades 30.10@5%

Sterling Hack Saw Frames 30.10@10%

Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00 10%

Victory Hack Saw Blades 20%

Victory Hack Saw Frames 40%

Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades 40%**Scroll—**

Barnes, No. 7, \$15 25%

Barnes' Scroll Saw Blades 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18; with boring attachment, \$20 20%

Lester, complete, \$10.00 15.10%

Rogers, complete, \$3.50 and \$4.00 15.10%

Scissors—

Union Platform, Plain, \$2.10 @ \$2.30

Chatillon's:
Eureka 25%

Favorite 40%

Grocers' Trip Scales 50%

The Standard Portables 40%

The Standard R. R. and Wag- on 50.10%

Scrapers—

Box, 1 Handle doz. \$1.85 @ \$2.19

Box, 2 Handle doz. \$2.35 @ \$2.50

Ship, 1 Light, \$2.00; Heavy, \$1.50

Chapin-Stephens Co., Box, 30@30.10%

Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., \$2.50 @ 2.75; 1 1/4, \$3.00 @ 3.25; 1 1/2, \$3.50 @ 3.75

Bench, Wood 20.20@10%

Hand, Wood 70.10@70.10%

Chapin-Stephens Co., Hand 70.70@10.2%

Coach, Lag and Hand Rail—

Lag, Cone Point, 80.10@80.10%

Coach, Gimlet Point, 80.10@80.10%

Hand Rail 70.10@75%

Jack Screws—

Standard List 70.10@75%

Millers Falls 50.10@10%

Sweet Iron Works 70.75%

Machine—

Cut Tread, Iron, Brass or Bronze:

Flat Head or Round Head, 50@50.10%

Fillister Head 40.10@10%

Rolled Thread, F. H. or R. H., Iron 75.10%

F. H. or R. H., Brass, Nos. 8 to 14 65.10%

Set and Cap—

Set (Iron) 75.10@71.2%

Set (Steel), net advance over Iron 25%

Sq. Hd. Cap 70.10@71.2%

Hex. Hd. Cap 70.10@71.2%

Rd. Hd. Cap 60.7%

Fillister Hd. Cap 60.7%

Wood—

List July 23, 1903.

Flat Head, Iron 87.45@%

Round Head, Iron 85.5@%

Flat Head, Brass 80.65@%

Round Head, Brass 77.45@%

Flat Head, Bronze 75.5@%

Round Head, Bronze 72.45@%

Drive Screws 87.45@%

Scroll Saws—See *Saws, Scroll.***Scythes—**

Per doz.

Plain Grass, Cutting Edge Polished \$6.25 @ \$6.50

Clipper, Bronzed Web, \$6.50 @ \$6.75

Solid Steel, Web and Backs Polished \$7.00 @ \$7.25

Bush, Weed and Bramble, Painted \$6.50 @ \$6.75

Grain, Painted, Cutting Edge Polished \$8.25 @ \$8.50

Clipper Grain, Bronze Web, \$8.50 @ \$8.75

Seeders, Raisin—

Enterprise 25.30%

Sets—Awl and Tool—

Fray's Tool Handles, Nos. 1, \$12; 2, \$16; 3, \$12 50%

Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18 20.10%

Garden Tool Sets—

Ft. Madison Three Poles, Hoe, Rake and Shovel \$ doz. sets \$9.00

Sets, Nail—

Octagon gro. \$3.50 @ \$3.75

Buck Bros 27%

Mayhew's Corrugated, Cup Pt. \$ doz. \$9.00

Snell's Corrugated, Cup Pt. 40.10%

Snell's Knurled, Cup Pt. 40.10%

Victor Knurled, Cup Pt. \$ doz. \$7.50

Rivet—

Regular list 75.75@10%

Saw—Atkin's:
Criterion 40%

Adjustable 40%

Diston's Star, Monarch and Triumph 30%

Morrill's No. 1 \$15.00

Nos. 3, Mill \$20.00

No. 5, Mill \$15.00

No. 10, 11, 95 \$10.00

No. 1 Old Style \$10.00

Special \$12.25

Giant Royal Cross Cut \$ doz. \$7.50

Royal, Hand \$ doz. \$4.50

Taintor Positive \$ doz. \$6.75

Sharpeners, Knife—Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, \$ doz. \$1.50

Mounted Kitchen Hand Stone, \$ doz. \$1.50

Natural Grit Carving Knife Hones, \$ doz. \$3.00

Quick Cut Emery Carving Knife Hones, \$ doz. \$1.50

Quick Edge Pocket Knife Hones, \$ doz. \$2.50

Skate—

Smith & Hemenway Co., Eureka 50%

Shaves, Spoke—

Iron doz. \$1.25

Wood doz. \$2.00

Bailey's (Stanley B. & L. Co.) 45%

Chapin-Stephens Co. 30.60@10%

Goodell's, \$ doz. \$9.00 15.10%

Shears—

Cast Iron, 7 8 9 in.

Best \$16.00 18.00 20.00 gro.

Good \$13.00 15.00 17.00 gro.

Cheap \$5.00 6.00 7.00 gro.

Straight Trimmers, &c.:
Best quality Jap. 70.10@5%

Best quality Nickel 60.10@5%

Tailors' Shears 40.10@10%

Acme Cast Shears 40.40@5%

Heinrich's Tailors' Shears 10%

National Cutlery Co.'s Nickel Plated, 60.10%; Japan Handles 70.10%

Columbian Cutlery Co.:
Sheep, 1900 list 30.10@5%

Grass 50.10%

Horse or Mule 50.10%

J. W. & Sons Co.:
Best quality Jap'd 60.10%

Best quality Nickleled 50.10%

Tailors' 50.10%

Tinners' Snips—

Steel Blades 80.65@20.10%

Steel Laid Blades 50.10%

Acme Cast Snips 40.15@5%

Forged Handles, Steel Blades, Berlin 50%

Heinrich's Snips 40%

Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in. 33.4% 7 1/2

National Cutlery Co.'s Forged Steel 80

Nagars Snips 40%

P. S. & W. Forged Handles, 25%

W. R. W. 50%

J. Wiss & Sons Co.:
Wiss Forged Steel 25%**Pruning Shears—**

Cronk's Hand Shears 33.4%

Cronk's Wood Handle Shears 33.4%

Diston's Combined Pruning Hook and Saw, \$ doz. \$18.00 25%

Diston's Pruning Hook only, \$ doz. \$12.00 25%

J. T. Henry Mfg. Co.:
Pruning Shears, all grades 40%

P. S. & W. Forged Handles, 25%

Columbian Cutlery Co.:
Hedge, Wilcut Brand 60.10%

Lawn and Border, Wilcut Brand, 60.10%

Sheaves—Sliding Door—

Reading list 40%

R. & E. list 15%

Shells—Shells, Empty—Brass Shells, Empty:
Climax, 10 and 12 gauge 60.65%

Club, Rival, 65.65%; First Quality, 60.65%

Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25.10%

Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade 25.65%

Union, League, 10 and 12 gauge, Rival Grade 25%

New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 20%

Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade 20%

Shells, Loaded—

Loaded with Black Powder 40%

Loaded with Smokeless Powder, medium grade 40.65%

Loaded with Smokeless Powder, high grade 40.10@10%

Union Metallic Cartridge Co.:
New Club, Black Powders 40%

Nitro Club, Smokeless Powders 40.65%

Arrow, Smokeless Powders 40.10@10%

Winchester:
Smokeless Repeater Grade 40.65%

Smokeless Leader Grade 40.10@10%

Black Powder 40%

Shingles, Metal—Per Sq.Edwards Mfg. Co.:
14 x 20 \$4.25 Galv. \$6.03

10 x 14 4.50 6.25

7 x 10 4.75 6.50

Wheeling Corrugating Co.:
Dixie, 11 x 20 in. \$4.05 \$5.05

Dixie, 10 x 14 in. 4.25 5.45

Dixie, 7 x 10 in. 6.25 6.70

Shoes, Horse, Mule, &c.—F.o.b. Pittsburgh:
Iron per keg \$4.10

Steel per keg \$3.85

Burden's, all sizes per keg \$3.90

Shot—

25-lb. bag \$1.80

Drop, up to B 2.05

Drop, B and larger 2.05

Buck 2.05

Chilled 2.05

Dust 2.30

Shovels and Spades—

Association List, Nov. 15, 1902 40%

Avery Stamping Co. 40%

Snow Shovels—

Long Handle \$3.25 @ \$3.50

Wood and Mail, D Handle, \$3.75 @ \$4.00

Sieves and Sifters—

Hunter's Imitation, gro. \$9.50

Hunter's Genuine, per gro. \$12.00

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, \$3.25; \$ doz. \$39.00

Sieves, Seamless Metallic—Per dozen:
Mesh 1 1/2 1 3/4 1 1/2 1 1/4 1 1/2

Iron Wire \$1.05 1.05 1.10 1.20

Tinned Wire \$1.15 1.15 1.20 1.30

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.

Mesh 18, Nested doz. \$0.90 @ 0.95

Mesh 20, Nested doz. \$1.00 @ 1.05

Mesh 24, Nested doz. \$1.30 @ 1.40

Sinks, Cast Iron—Painted, Standard Nat:
12 x 12 to 22 x 36 in. 60%

20 x 24 to 24 x 50 in. 50%

Scythe Stones—		
Pike Mfg. Co., 1907 list:		
Black Diamond S. S.	gro.	\$12.00
Lanville S. S.	gro.	\$11.00
White Mountain S. S.	gro.	\$9.50
Green Mountain S. S.	gro.	\$7.00
Extra Indian Pond S. S.	gro.	\$8.00
No. 1 Indian Pond S. S.	gro.	\$7.50
No. 2 Indian Pond S. S.	gro.	\$5.00
Leader Red End S. S.	gro.	\$5.00
Quick Cut Emery	gro.	\$10.00
Pure Corundum	gro.	\$18.00
Crescent	gro.	\$7.00
Emery Scythe Rifles, 2 Coat.		\$8.80
Emery Scythe Rifles, 3 Coat.		\$11.00
Emery Scythe Rifles, 4 Coat.		\$13.20
Balance of 1907 list 33%		
Lectro (Artificial), 1/2 gro.		\$12.00 33 1/2%
Lightning (Artificial), 1/2 gro.		\$18.00 33 1/2%
Stoppers, Bottle—		
Victor Bottle Stoppers	gro.	\$9.00
Stops—Bench—		
Millers Falls		15¢ 10%
Morrill's, 1/2 doz., No. 1		\$10.00 50%
Morrill's, No. 2, 1/2 doz.		\$12.50 50%
Door—		
Chapin-Stevens Co.		50¢ 50 10%
Plane—		
Chapin-Stevens Co.		20%
Straps—Box—		
Acme Embossed, case lots.		20¢ 10 10%
Cary's Universal, case lots.		20¢ 10 10%
Stretchers, Carpet—		
Cast Iron, Steel Points, doz.		55¢
All Steel Sockets, doz.		\$2.00 2 25
Excelsior Stretcher and Tack Hammer Combined, 1/2 doz.		\$6.00 20%
Stuffers, Sausage—		
Enterprise Mfg. Co., Stuffers and		
Lard Presses		25¢ 25 7 1/2%
National Specialty Co., list Jan. 1,		
1902		30¢ 5%
P., S. & W. Co.		10¢ 10 5%
Sweepers, Carpet—		
Bissell Carpet Sweeper Co.		Per doz.—
Cryo Bearing Superba		\$36.00
Triumph, \$33.00; Parlor Queen,		
\$30.00; Elite, \$29.00; Boudoir,		
\$27.00; American Queen, \$27.00;		
Ideal, \$25.00; Gold Medal, \$24.00;		
Primier, \$24.00; Prize, \$24.00; Wel-		
come, \$24.00; Grand Rapids,		
Nickel, \$24.00; Japan, \$22.00;		
Crystal, \$26.00; Grand, \$36.00;		
Parlor Grand, \$48.00; Club, \$54.00;		
Hall, \$60.00; Standard Nickel,		
\$22.00; Standard Japan, \$20.00;		
Crown Jewel, Nickel, \$21.00;		
Crown Jewel, Japan, \$19.00; Jun-		
ior, Nickel, \$22.00; Junior, Japan,		
\$20.00.		
NOTE.—Rebates: 50¢ per dozen on		
three dozen lots; \$1 per dozen on five		
dozen lots; \$2 per dozen on ten dozen		
lots.		
Tacks, Finishing Nails,		
&c.		
American Carpet Tacks		90¢ 40%
American Cut Tacks		90¢ 40%
Svedes' Cut Tacks		90¢ 40%
Svedes' Upholsterers'		90¢ 40%
Gimp Tacks		90¢ 50%
Lace Tacks		90¢ 50%
Trimmers' Tacks		90¢ 40%
Looking Glass Tacks		45%
Bill Posters' and Railroad Tacks,		
90¢ 50¢ 10%		
Hungarian Nails		90¢ 20%
Finishing Nails		70%
Trunk and Clout Nails		90¢ 10%
NOTE.—The above prices are for		
Straight Weights.		
Miscellaneous—		
Double Pointed Tacks		90¢ 46 tens@—%
See also Nails, Wire.		
Tanks, Oil and Gasoline—		
Wilson & Friend Co.		
Gal. Gasoline	Oil	
30	\$2.75	\$3.00
60	\$3.50	\$4.00
110	\$5.00	\$5.75
Tapes, Measuring—		
American Asses' Skin		50¢ 10%
Patent Leather		25¢ 30 5%
Steel		33 1/2 45%
Chesterman's		25¢ 25 5%
Keuffel & Esser Co.		
Favorite, Ass Skin		40¢ 10 50%
Favorite, Duck and Leather		25¢ 50 25 10%
Metallic and Steel, lower list, 35¢		
35¢ 5%; Pocket, 35¢ 35 5%		
Lutkins—		
Asses' Skin		40¢ 10 50%
Metallic		30¢ 30 5%
Patent Bend, Leather		25¢ 50 25 10%
Pocket		40¢ 40 5%
Steel		33 1/2 35%
Wiebusch & Hilger:		
Chesterman's Metallic, No. 34L,		
etc.		25%
Chesterman's Steel, No. 103B1,		
etc.		35%
Teeth, Harrow—		
Steel Harrow Teeth, plain or		
headed, 3/4-inch and larger,		
per 100 lb.		\$2.50 2 50
Thermometers—		
Tin Case, Cabinet, Flange,		
Dairy, &c.		30¢ 35%
Ties, Bale—Steel Wire—		
Single Loop		8 1/2 10%
Monitor, Cross Head, &c. 70¢ 1/2%		
Tinner's Shears, &c.—		
See Shears, Tinner's, &c.		

Tinware—		
Stamped, Japanned and Pieced, sold		
very generally at net prices.		
Tire Benders, Upsetters, &c.		
See Benders and Upsetters, Tire.		
Tools—Coopers—		
L. & I. J. White	20¢ 20 5%	
Haying—		
Myers' Hay Tools		50%
Ice Tools—		
Gifford-Wood Co.		15%
Miniature—		
Smith & Hemenway Co.'s, David-		
son, 1/2 doz., Nickel Plated, \$1.50;		
Gold Plated		\$2.00
Saw—		
Atkins' Cross Cut Saw Tools		35¢ 5%
Simond's Improved		33%
Simonds' Crescent		30%
Ship—		
L. & I. J. White		25%
Torches—		
Hammers, Engine, 1/2 doz.		\$4.50
Transom Lifters—		
See Lifters, Transom.		
Traps—Fly—		
Balloon, Globe or Acme, doz.		\$1.15 1 25
Harper, Champion or Paragon,		
doz.		\$1.25 1 40
gro. \$13.00 13 50		
Game—		
Imitation Oneida		75¢ 10%
Newhouse		30¢ 5%
Hawley & Norton		65¢ 10%
Victor		75¢ 35 10%
Oneida Community Jump		70¢ 5%
Stop Thief		60%
Tree Trap		60%
Hector		75¢ 75 10%
Mouse and Rat—		
Mouse, Wood, Choker, doz. holes,		
12¢		
Mouse, Round or Square Wire,		
doz. 85¢ 99¢		
Marty French Rat and Mouse Traps		
(Genuine), 1/2 doz.		
Crate lots. Small lots.		
No. 1, Rat	\$11.50	\$14.50
No. 3, Rat	\$5.75	\$6.50
No. 3 1/2, Rat	\$1.70	\$1.25
No. 5, Mouse	\$2.25	\$3.00
Animal Trap Co.		
Out o' Sight, Mouse, 1/2 doz.		\$0.60
Out o' Sight, Rat, 1/2 doz.		1.20
Easy Set, Mouse, 1/2 doz. . . . .		.35
Easy Set, Rat, 1/2 doz. . . . .		.85
Out o' Sight Chockers, 1/2 doz.		
holes . . . . .		.12
Out o' Sight, Tin, 5-hole, 1/2 doz.		
traps . . . . .		.75
Trowels—		
Disston Brick and Pointing		25%
Disston Plastering		20%
Disston "Standard Brand" and Gar-		
den Trowels		30%
Kohler's Steel Garden Trowels, 1/2		
5 in., \$4.80; 6 in., \$6.00.		
Never-Break Forged Steel Garden		
Trowels, in bulk, net 1/2 gro. \$5.50		
In 1 doz. boxes		1/2 gro. \$6.00
Woodrough & McParlin, Plastering		25%
Trucks, Warehouse, &c.—		
B. & L. Block Co.		
New York Pattern		50¢ 10%
Western Pattern		60¢ 10%
Handy Trucks		1/2 doz. \$16.00
Grocery		1/2 doz. \$15.00
McKinney Trucks		each, net \$10.00
Model Stove Trucks		1/2 doz. \$18.50
Tubs, Wash—		
M'fgr's list, price per gross.		
No. 0 1 2 3		
Galvanized	\$67 \$79 \$89 \$99	10¢ 7 1/2
45¢ 5%		
Twine, Miscellaneous—		
Flax Twine:		
No. 9, 1/4 and 1/2-lb. Balls		21¢ 23¢
No. 12, 1/4 and 1/2-lb. Balls		19¢ 21¢
No. 18, 1/4 and 1/2-lb. Balls		16¢ 18¢
No. 24, 1/4 and 1/2-lb. Balls		15¢ 17 1/2¢
No. 36, 1/4 and 1/2-lb. Balls		15¢ 17 1/2¢
Chalk Line, Cotton		1 1/2 lb. 24¢
Balls		24¢ 29¢
Cotton Mops, 6, 9, 12 and 15 lb.		
to doz.		8 1/2 19¢
Cotton Wrapping, 5 Balls to 1		
according to quality		13 1/2 19¢
American 2-Ply Hemp		
1/2-lb. Balls		12 1/2 15
American 3-Ply Hemp 1-lb.		
Balls		13 1/2 16 1/2
India, 2-Ply Hemp, 1/4-lb. Balls.		
Balls (Spring Twine)		7 1/2 9¢
India 3-Ply Hemp, 1-lb. Balls		7 1/2 9¢
India 2-Ply Hemp, 1/4-lb. Balls		7 1/2 9¢
2, 3, 4 and 5-Ply Jute, 1-lb.		7 1/2 9¢
Balls		9 1/2 11¢
Mason Line, Linen, 1/4-lb. Balls		17¢
No. 26 Mattress, 1/4 and 1/2 lb.		
Balls, according to quality		30¢ 60¢
Wool, 3 to 6 ply		B 6¢; A 7 1/2¢
Vises—		
Solid Box		50¢ 55¢ 50 10 5%
Parallel—		
Athol Machine Co.		
Simpson's Adjustable		40%
Standard		40%
Amateur		55%
Columbian Haw. Co.		40 5%
Slide		65%

Fisher & Norris Double Screw, net,		
each, Nos. 2, \$10.50; 3, \$16.00; 4,		
\$20.50; 5, \$27.00; 6, \$32.00.		
Fulton Mach. & Vise Co.:		
F. & R. Double Swivel Ma-		
ch. nists'	40%	
Star, Solid Jaw, Machinists'	40%	
Holland's	40&40&5%	
Machinists'	65&5&70%	
Keystone	65&5&70%	
Lewis Tool Co.:		
Adjustable Jaw	30%	
Monarch, 50%; Solid Jaw	50%	
Massey Vise Co.:		
Clincher	40%	
Parallel Bar	15%	
Perfect, 15%; Lightning Grip	15%	
Merrill's	25%	
Millers Falls Oval Slide Pattern	60&10%	
Parker's:		
Victor, 20&25%; Regulars	20&25%	
Vulcan's	40&45%	
Combination Pipe	55&60%	
Prentiss	25&25%	
Rock Island	25%	
Snediker's	30 1/2%	
Stephens	33 1/2%	
Saw Filers		
Disston's D. 3 Clamp and Guide, 1/2		
doz., \$24.00, 30%; Clamps	30%	
Perfection Saw Clamps, 1/2 doz.	\$4.50	
Reading	60%	
Wood Workers—		
Fulton Mach. & Vise Co.:		
F. & R. Double Swivel Coach-		
man's	40%	
Star Solid Jaw Woodworkers'	60%	
Massey Vise Co.:		
Lightning Grip, 15%; Perfect	15%	
Wyman & Gordon's Quick Action, 6		
in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.		
Miscellaneous—		
Fulton Machine & Vise Co., Com-		
bination Pipe	70%	
Holland's Combination Pipe	60&60&5%	
Massey's Quick Action Pipe	40%	
Parker's Combination Pipe:		
87 Series, 60%; 187 Series, 60&5%; No.		
870, 40%		
Rock Island Pipe	25%	
Wads—Price per M.		
B. E., 11 up	60¢	Dis. 15%
B. E., 9 and 10	70¢	
B. E., 8	80¢	
B. E., 7	80¢	
P. E., 11 up	\$1.00	
P. E., 9 and 10	1.25	
P. E., 8	1.50	
P. E., 7	1.50	
Ely's B. E., 11 and larger	\$1.70 1 75	
Ely's P. E., 12 to 20	\$3.00 3 25	
Ware, Hollow—		
Cast Iron, Hollow—		
Store Hollow Ware:		
Enameled	45¢ 10%	
Ground	50¢ 45%	
Plain or Unground	60%	
Country Hollow Ware, per 100		
lbs	\$2.75 3 30	
White Enameled Ware:		
Maslin Kettles	65¢ 10%	
Covered Ware:		
Tinned and Turned	35¢ 10%	
Enameled	45¢ 10%	
See also Pots, Glue.		
Enameled—		
Agate Nickel Steel Ware	33 1/2%	
El-an-gue	60&10%	
Iron Clad Ware	70&10%	
Lava and Volcanic, Enameled	40&10%	
Tea Kettles—		
Galvanized Tea Kettles:		
Inch	6 7 8 9	
Each	45¢ 50¢ 55¢ 65¢	
Steel Hollow Ware—		
Avery Stamping Co.:		
Never-Break Spiders and Grid-		
dles	65&10%	
Steel Kettles, Maslins Scotch		
Bowls, Tin'd	60%	
Steel Stew Pans, Stew Pots, etc.		
Porcelainized	50%	
Cleveland Stamping & Tool Co.:		
Solid Steel Spiders and Grid-		
dles	65&5%	
Solid Steel Kettles	60&5%	
Warmers, Foot—		
Pike Mfg. Co., Soapstone	40&40&10%	
Washboards—		
No.		\$9 doz.
800—Brush King, Single Surface.		\$2.80
801—Back		\$2.80
862—White		\$3.35
Glass		\$3.35
964—Royal Blue Enamel, Single Sur-		\$3.35
face, Ventilated Back		\$3.35
1172—Our Best, Single Zinc, Soap		\$3.35
Draiser		\$3.35
722—Soap Saver, Single Zinc, Iron		\$3.35
Top		\$3.35
100—Northern Queen, Single Zinc		\$3.00
Perforated, Open Back		\$3.00
134—Universal, Single Zinc, Extra		\$2.80
Family Size Ventilated Back		\$2.80
760—Banner Globe, Single Zinc, Ven-		\$2.25
tilated Back		\$2.25
57—Peerless, Double Zinc, Spring		\$5.70
Protector		\$5.70
56—Bed Cross, Double Zinc, Spring		\$3.60
Protector		\$3.60
17—North Star, Solid Zinc, Swing		\$3.60
Protector		\$3.60
797—Jewel, Single Zinc, Pail Size		\$1.25
Washers—Leather, Axle—		
Solid	90&90&10%	
Patent	90&90&5%	
Coll: 1/4 1 1/4 1 1/4 inch.		
3/4 1 1/4		

